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ADDRESSES AND ORIGINAL ARTICLES

THE CLASSIFICATION OF BUCCAL NEOPLASMS

IN RELATION TO TREATMENT AND PROGNOSIS *

BY A. J. GARDHAM, M.S. Lond., F.R.C.S.

ASSISTANT SURGEON, UNIVERSITY COLLEGE HOSPITAL, LONDON; SURGEON TO OUTPATIENTS, HAMPSTEAD GENERAL HOSPITAL

THIS lecture is founded on experience gained in the care of 84 personal cases of carcinoma of the mouth and on observations made on a large number of others by the courtesy of my friends and colleagues at University College Hospital. Since the number of cases dealt with is comparatively small and their classification divides them into a large number of groups, I have avoided any attempt at a complete statistical review and have used individual cases or groups of cases purely for purposes of illustration.

The wide variations which these growths show in their reaction to treatment are very impressive. Consideration of late results lends no support to the popular conception that these variations depend largely on the time at which the patient seeks advice, for many of the most relentlessly malignant growths in my series are to be found among patients who reported for treatment within a few months of their first symptom.

PATHOLOGY

My object in reviewing my experience is to attempt to provide more reliable standards by correlating variations in malignancy with gross pathological characteristics. I am leaving aside to a large extent questions of microscopic pathology, as this has already received a great deal of attention under eyes more practised than my own.

The pathology of new growths in the mouth may be considered under five headings:—

1. *Site of origin of the growth.*—It is well known that growths of the lip pursue a benign course purely by virtue of their site of origin. It is less generally realised that there are four other types of growth of which the course may be predicted according to the point from which they arise. Growths of the cheek resemble those of the lip up to a point, but statistics regarding their curability vary very widely. This is probably explained by the observation that the malignancy of these growths depends more on the stage of advancement and less on other pathological characteristics than is the case with other growths of the mouth; hence it is safe to apply the standards of carcinoma of the lip to growths of the cheek which have not extended beyond the soft tissues, whereas those which are more widespread react quite differently. This has certainly been my experience, for referring to the small growths in my series I find that 4 out of 5 of them remained healed for four years or more, whereas no patient with a large growth survived longer than two years.

A less common growth which runs a stereotyped course and exhibits a particular reaction to treatment by virtue of its site of origin is carcinoma of the floor of the mouth. I propose to describe this growth more fully, for it forms a very well-defined type which is often not recognised, although it was mentioned by Butlin many years ago. The lesion starts always in the region of the orifice of the submaxillary duct and spreads widely but superficially in the floor of the mouth, finally attacking the mucous membrane covering the lower alveolus. At the same time it spreads upwards on the surface of the hyoglossus towards the dorsum of the tongue, where in moderately advanced cases a dimple marks the point to which the tumour has extended. The anatomical situation of these growths suggests that early invasion of the submaxillary lymph-glands is a probability, but in fact glandular invasion is nearly always late, and as regards both its local reaction to treatment and its metastasising power this growth is very benign. It is interesting to note that in the year in which I was born there died a man who had been operated on by Christopher Heath twenty-four years earlier for this condition. The specimen is in the museum of University College Hospital.

The anterior part of the tongue does not impose any particular course on the tumours which arise in it, and estimates of the malignancy of such growths must be made on other grounds. Even in the posterior third both squamous-cell carcinoma and lympho-epithelioma occur, and it is by the manner in which the tumour spreads rather than by its site of origin that the most reliable indications are to be obtained. There is, however, a tumour of the squamous type which originates near the epiglottis and is peculiar in that it tends to remain localised in this region without metastases. The tumour is rare, and my personal cases contain no example of it; but recognition of the type is important, for a particular form of treatment is applicable to it.

The only other type of growth in the mouth which runs a course which is decided purely by its site of origin is carcinoma of the lower alveolus. This tumour forms an interesting contrast to carcinoma of the floor of the mouth, for the two growths originate within a centimetre of one another and are almost exactly opposite in all their characteristics. The tumour of the alveolus, which is a squamous carcinoma, shows no tendency to spread superficially, and the external signs are limited for many months to a narrow fissured ulcer on the surface of the alveolus. The edges of the ulcer are not everted, and on first inspection it is almost impossible to believe that it is malignant (fig. 1). The spread of this tumour is entirely into the bone of the lower jaw, and radiograms taken when the ulcer is still very small may show considerable destruction of its substance. At a later stage infiltration is made obvious by expansion of the jaw, but at all times it is much more widespread than the physical signs or the radiograms suggest (fig. 2). This growth is probably more malignant than any other which occurs in the mouth, and among 5 personal cases the longest period of survival is two years.

2. *Method of spread.*—In some cases valuable information regarding malignancy may be gained by observation of the method by which a tumour spreads. Thus the only common factor which I have been able to discover among growths of the anterior part of the tongue which have reacted favourably to treatment is preservation of mobility of the organ. This means nothing in early growths, but ulcerated tumours 2–3 cm. in diameter which have not interfered with free protrusion account in my series for a very high proportion of the true lingual tumours which have proved to be of low malignancy, and in 4 out of 5

* Hunterian lecture delivered to the Royal College of Surgeons on Jan. 20, 1939.

patients with large growths who survived more than five years it is positively stated in the notes that protrusion was not impaired.

Mobile tumours of the tongue which are not ulcerated commonly belong to another class, which is characterised by wide submucous spread. Tumours showing this type of spread have occurred in my series not only in the posterior third of the tongue but also in the tonsil, the nasopharynx, and the upper jaw. They are not squamous epitheliomata but apart from this have shown no uniformity in microscopic structure. All of them have shown a ready response to irradiation in the primary growth and the immediate metastases, combined with a strong tendency to the formation of remote metastases within five years of their onset. All have been fully described and are generally recognised except that involving the upper jaw. This tumour is rare. My series contains only 2 cases, and study of the literature reveals only a few reports of other examples. The site of origin of the tumour is doubtful; but, since pain in the second division of the fifth nerve generally precedes any other symptom or physical sign, it is presumably in the pterygomaxillary region. In course of time it produces a symmetrical enlargement of the whole upper jaw, including as a rule the upper alveolus (fig. 3). The spread is submucous until the late stages, and when ulceration finally occurs it is by the tumour bursting through the mucosa rather than involving it. By this means a mushroom-shaped protrusion is formed which is quite unlike the friable ulcer which results from a true epithelioma. In spite of its rarity this tumour should be classified alone, for its reaction to treatment is characteristic and quite unlike that of other tumours of the jaw.

3. *Time of appearance and rate of spread of glandular metastases in relation to the primary growth.*—It is well known that attempts at radical cure of carcinomatous glands in the neck, when no primary focus can be found, are seldom or never successful. In my experience the same is true if metastases appear while the primary growth is still small and early, or if they advance at a rate disproportionate to that of the extension of the primary growth. In this particular, time relations have proved to be a much more reliable indication than extent of involvement. In my series surgical treatment of glands classed as doubtfully operable on account of extent have produced immunity from recurrence for more than four years in 2 cases, whereas attempts at radical excision of easily operable glands which had appeared unduly early have proved uniformly disastrous.

4. *Reaction to treatment.*—Small early tumours have in some of my cases declared their true nature by not reacting to adequate interstitial irradiation. No tumour which involves compact bone is to be expected to react to such treatment; but, when a small early growth in soft tissue has not healed as a result of interstitial irradiation or has recurred within a few months, it has generally proved to be a lesion of high essential malignancy and equally resistant to other forms of treatment. In estimating the significance of early recurrences it is important to observe whether they are in the centre or at the periphery of the treated area. In the first case they imply that the growth is capable of surviving in the midst of fully irradiated tissues and are nearly always a sign of high essential malignancy; in the latter they may only indicate that the original irradiation was unduly circumscribed. At the other end of the scale unduly rapid regression under the influence of irradiation has also proved to be a most unfavourable sign as regards ultimate prognosis, and the conceptions of the past regarding the malignancy of rapidly growing tumours unfortunately remain true in spite of the possibility of securing disappearance of the primary lesion.

The effect of preliminary indirect treatment has sometimes proved of service in estimating malignancy. Thus a tumour which regresses after extraction of septic teeth and removal of irritation by tracheotomy or gastrostomy may usually be classified as comparatively benign. Tumours which extend rapidly in spite of such measures are very malignant.

5. *Microscopic appearances.*—The available information on this subject has been admirably laid out by Broders and Phillips and other workers. I have nothing to add to their observations except to emphasise that a high degree of differentiation is not sufficient by itself to classify a tumour as benign.

RELATION BETWEEN ESSENTIAL MALIGNANCY AND TREATMENT

The preceding classification often makes it possible to estimate fairly accurately the essential malignancy of a tumour before treatment is instituted. The importance of doing so is much greater since the advent of irradiation than it was when operation was the only available means of treatment, since, on the one hand, irradiation may be used as a means of palliation for incurable tumours which would formerly have been subjected to desperate attempts at radical treatment, and, on the other hand, its effect on normal tissue may be so powerful and so persistent that one hesitates to use it when prolonged survival is expected.

In a few cases, such as infiltrating carcinoma of the lower jaw, prompt realisation of the high malignancy of an apparently localised growth may make curative radical treatment a possibility. For the rest, the after-history of my cases suggests that evidence of very high malignancy should be regarded as an indication for restricting the scope of treatment so as to aim deliberately at palliation. The five-year survivals among cases with growths which may be classified as highly malignant are negligible, however early the lesion and however extended the treatment; and my case-records show many instances in which attempts to match the malignancy of the growth by the radical nature of the treatment have ended disastrously in widespread diffuse recurrence. This has happened particularly often in attempts to treat glandular metastases by operation when their size or rate of advance was disproportionate to that of the primary growth.

A further example of the virtue of conservatism in the face of high malignancy is to be found in relation to submucous infiltrating growths of the nasopharynx, the posterior third of the tongue, and the upper jaw. Judging from my own and other collected cases, five-year survival in patients suffering from these growths is exceptional; for, if there is no local recurrence, death from distant metastases is the rule. In these cases the prospects of complete cure are too small to justify heroic attempts at complete eradication of the local lesion and long-term palliation by conservative irradiation is the correct aim. Irradiation in doses which do not cause immediate damage to normal soft tissues may be freely used in the treatment of all growths of high malignancy, for late effects seldom come into the picture. In growths of low malignancy, when long life can be expected, the need for caution is greater than is commonly supposed, as I shall hope to demonstrate in a moment.

OTHER FACTORS OF IMPORTANCE IN TREATMENT

Accessibility of a growth has no essential relation to its reaction to treatment; and some inaccessible lesions, once they are approached, react quite as readily as carcinoma of the lip, whereas others which are superficial and readily accessible to any form of treatment are practically hopeless from the beginning. Inaccessible growths are, however, separated from the surface by a mass of normal tissue into which the growth generally has no tendency to spread, and no form of treatment can be applied to them without damaging these normal tissues to some extent. The damage caused by operation is comparatively easy to assess, for it is largely a matter of immediate mortality and subsequent deformity. In this particular my experience confirms the finding that the mortality and complications associated with approach through the middle line are significantly less than those which result from lateral approach across the lymphatic fields. The damage caused to normal tissue by irradiation is more difficult to assess, but evidence is rapidly accumulating that it is more serious and much more permanent than we have been accustomed to believe. It is largely a question of liability to subsequent necrosis and of increased susceptibility to independent malignant growths. It is most easy to demonstrate the importance of these factors by examining the late results in a growth of comparatively low malignancy, and for this purpose I wish to quote in some detail my experience with carcinoma of the floor of the mouth, which is the only common inaccessible growth in which prolonged survival is the rule.

Up to three years ago I employed a routine treatment for these growths in which I used interstitial irradiation either alone or in combination with a surface application. By this method I treated 9 cases, some of them apparently very advanced. Of these patients 1 died three years after treatment with necrosis of the jaw, and, since no microscopical examination was made, it is possible that growth was present. Of the remaining 8 not one has died of the primary lesion or of metastases from it; 2 were treated less than five years ago and are alive and well. Of the 6 treated more than five years ago 1 has died of an intercurrent disease the nature of which is not known; 2 have developed necrosis of the jaw, apparently spontaneous (one six and the other seven years after treatment), neither of them having suffered any symptoms in the intervening time (fig. 4). The 3 remaining patients all developed and died of independent primary growths: one in the upper jaw, one in the larynx, and one in the bronchus; hence, although the results of treatment appear at first sight to be extremely satisfactory, they are actually very bad as regards prolongation of useful life. The poor results are not due to failure to cure the primary growth, and at least two of them were caused by the influence of irradiation on normal tissues and could have been avoided by using operative methods. The three independent primary growths prove nothing, but similar cases have been reported with increasing frequency in the past few years, and it may at least prove to be a profitable speculation whether the increase is connected with the widespread use of irradiation in the past decade.

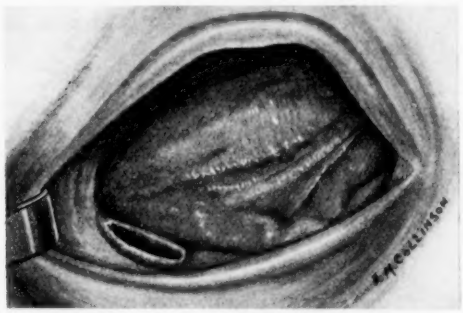

FIG. 1—Squamous carcinoma of lower jaw shown superficially by a narrow fissured ulcer.

FIG. 2—Radiogram of squamous carcinoma of lower jaw, showing extensive destruction of bone. (Same case as fig. 1.)

It therefore appears that accessibility is a problem which is very intimately connected with the possibility of undue damage to normal tissues. Such damage can occur also in accessible tumours treated by irradiation, but it generally does so as a result of overdosage. My experience, which is confirmed by so great an authority as Berven of Radiumhemmet, is that increase of the dose of irradiation to a point at which it causes serious and immediate damage to normal soft tissue never increases the hope of eradicating a resistant growth. Following the principle that normal tissue must never be over-treated whatever the malignancy of the growth, I have escaped late necrosis as a complication of localised irradiation of accessible tumours, and only one of my patients so treated has died of an independent primary growth; hence, as far as it is safe to base conclusions on so limited a number of cases, it does not appear that fear of damage to normal tissue is an important factor provided that the growth is accessible and is not in close relation to bone or cartilage.

Radiosensitivity.—The decision between operation and irradiation must not be made purely on the grounds of radiosensitivity. Neoplasms which are extremely radiosensitive are nearly always unsuitable for operation on account of their rapid growth and tendency to widespread metastasis, but it has been abundantly proved that the radiosensitivity of these lesions does not in any way affect their high essential malignancy, and long-term palliation is the best that can be hoped for in most cases. Growths which give the best ultimate results with irradiation are those which have a lower degree of radiosensitivity and at the same time a lower essential malignancy; hence, if irradiation is reserved for highly radiosensitive growths, those which give the best ultimate results are excluded.

General condition of the patient is not a factor of importance in superficial lesions. When the choice lies between operation and irradiation for inaccessible

A B

FIG. 3—Submucous infiltrating tumour of upper jaw: A, before treatment; B, six weeks later after mass irradiation.

growths, pulmonary and cardiac complications weight the balance heavily in the direction of irradiation, partly because they increase the risk of operation and partly because the late ill effects of irradiation need not be considered when expectation of life is short.

CONCLUSIONS

Most of the growths which I have mentioned fall easily into one of three classes according to their malignancy and their accessibility, and I propose to refer to them as classes A, B, and C.

Class A consists of neoplasms which are accessible and do not show any of the characteristics of high malignancy which I have tabulated. It includes most carcinomas of the lip and most small carcinomas of the cheek. In these growths both operation and irradiation give excellent results. Irradiation produces less deformity and appears not to endanger normal tissue if it is used with discretion and provided that direct involvement of bone is absent.

There is no doubt that some growths of the anterior two-thirds of the tongue belong to class A; but, until we are better informed regarding the characteristics which denote low malignancy in this situation, all growths of the tongue in front of the foramen cæcum must remain unclassified and treatment must be based on the assumption that wide impalpable extensions exist in every case. That this is not so is shown by the cures in Butlin's first series of cases and by the occasional modern case—I have only one—in which treatment has been very strictly limited on account of poor general condition and the patient has continued to live free from recurrence for many years. The small variations produced in the proportion of five-year cures by extension and contraction of the scope of treatment suggest that this proportion is decided more by the nature of the growth than by the therapeutic methods applied to it; but for the moment, while it is possible to say with certainty that many growths of the tongue belong to class C, it is only possible to guess at the proportion which belongs to class A. Hopes that irradiation would bring a larger proportion of cases into the curable class have not materialised to any great extent. The curable growths are the same whichever method is used, and I think at least two-thirds of them belong to class A. For the rest operation is the better means of palliation if there is no great difference between the sensitivity of the growth and that of its surroundings. In all other circumstances irradiation is better, for reasons which I shall state when dealing with class C.

When no metastases are present in class A, I do not use prophylactic irradiation in the neck, for there is no real evidence that it diminishes the risk of invasion of glands, and we are completely uninformed as to the effects of irradiation on the power which normal tissues undoubtedly possess of resisting the invasion by growth. I prefer regular observation to any form of prophylactic treatment, even dissection, for I believe that glands which increase so rapidly that they become unsuitable for operation in the three months which elapse between one routine observation and the next are unsuitable for operation from the beginning and can produce disastrous results even if dissection is made before they are palpably enlarged. I therefore reserve operation for glands which appear comparatively late and develop slowly. Rapidly extending glands place the original tumour outside class A, and I shall deal with them later.

Class B consists of growths which are inaccessible but again show none of the characteristics of high malignancy. To this class belong carcinoma of the floor of the mouth, carcinoma of the epiglottic region, and a proportion of pharyngeal and antral growths. These are curable by irradiation unless they actually invade bone; but, since they originate and spread in close proximity to bone and lie far from the surface of the body, I believe that the damage inflicted on normal tissue in the course of their cure by this method is unjustifiably great. Carcinoma of the floor of the mouth and of the epiglottic region can both be exposed by a median approach which involves little danger to life, and the operation for the removal of localised antral growths is equally benign. Carcinoma of the pharynx is a separate problem. My experience of it is small, but I believe that localised growths do occur in this situation, and that the effect of preliminary indirect treatment by removal of sepsis and irritation is a valuable guide to the degree of malignancy. That operation in suitable cases is

FIG. 4—Radiogram of necrosis of the jaw of apparently spontaneous onset six years after interstitial irradiation of carcinoma of the floor of the mouth.

feasible and need place no undue strain on the vitality of the patient has been abundantly proved by the work of Mr. Wilfred Trotter, and I cannot believe that irradiation across masses of normal and sensitive tissue will ultimately prove to be the correct treatment for localised growths of the pharynx.

Growths of classes A and B which have been allowed to extend so that bone is involved before they are treated give the only opportunity for successful use of heroic and mutilating operations in the mouth and jaws. I believe that such operations should only be employed when there are reasonable grounds for supposing that the wide extensions are

FIG. 5—Photographs of a patient three weeks after resection of the jaw from the middle line anteriorly to the angle posteriorly. The extent of mobility of the jaw is also shown.

due to neglect to seek advice and not to rapid progress and high essential malignancy of the growth, for these are the only circumstances in which results are obtained which are a fair reward for the sufferings of the patient.

Class C includes growths which exhibit the signs of high malignancy which I have described. It is an important and varied group, and statistics show how large a proportion of cases of carcinoma of the mouth belong to it. Operations designed for treatment of these cases must necessarily be extensive and mutilating, and I believe that they are seldom justifiable.

Infiltrating carcinoma of the lower jaw must, however, be considered separately, partly because it is impossible even to impede the progress of the growth by irradiation without risking immediate necrosis of the jaw, and partly because the limitation of spread of the growth to a single organ makes operation a simple and comparatively benign method. My experience does not justify me in asserting that operations can cure, however extensive they are, for only one of my patients has survived, and he was treated only two years ago. I now employ a much more extended operation and am hopeful of its results, for in spite of its extent I do not think it need prove either severe or disabling. The small amount of ulceration in the original lesion makes it easier to avert severe sepsis, and grafts may be used with a fair prospect of success to replace the large piece of jaw which must be resected. Fig. 5 shows a patient some three weeks after resection of the jaw from the middle line anteriorly to the angle posteriorly, and the movement of the jaw was roughly the same as that shown in the photograph from the time of operation. A graft of rib together with its periosteum was used in this case.

Growths which spread submucously are practically identical in their reaction to treatment with those showing anaplastic structure under the microscope. Both generally destroy life in less than five years, and death is often due to remote metastases. These growths follow the general rule in their association of extreme radiosensitivity with high essential malignancy. The long-term palliative results which can be obtained by the use of mass irradiation in these cases are very striking. Fig. 3 shows an infiltrating tumour of the upper jaw and illustrates the effect of six weeks' treatment. This patient died five years after the onset of her symptoms, the cause of death being uncontrollable local recurrence. Irradiation may be freely used for the treatment of these tumours even when they involve bone, since the dose required to secure regression is small, the absence of sepsis from ulceration is a partial safeguard against immediate complications, and late complications are not a factor of importance on account of the short expectation of life.

Tumours which show their malignancy by early appearance and rapid spread of metastases are a difficult problem. If these or other tumours of high malignancy are subjected to extensive operation they are very liable to develop diffuse recurrence in the field of operation. This suggests that growth is present not only in the primary lesion and the glands but also in the lymphatics between and among them; hence any cutting operation is likely to accelerate rather than to retard further spread of the growth. Irradiation gives little hope of permanent cure, but satisfactory palliation is sometimes obtained, and, even if it does not impede the progress of the growth, it is unlikely to do harm and in this respect is greatly preferable to operation. Even cases in which small lesions have proved to be resistant to adequate interstitial irradiation should not, in my opinion, be subjected at once to extensive supposedly radical operations, since they also are often highly malignant and very liable to diffuse recurrence. Such cases are not very common, and I am not sure how it is best to handle them, but I believe that it is most profitable to treat them by a localised diathermy excision, embarking on more radical steps only in those cases which do not show a tendency to very early recurrence. I have no doubt that diffuse recurrence is a worse fate than death from an untreated lesion, and I believe that the victims of really fast-growing carcinoma who are subjected to attempts at radical operation run so great a risk of developing this complication that it is better to exclude them altogether from surgical treatment.

I do not anticipate that the conclusions which I have reached represent a permanent standpoint. I suspect that they are unduly sweeping in places, and I have no doubt that they will ultimately prove inaccurate in others. I feel, however, that treatment in this branch of surgery, as in many others in which rapid advances have taken place, has suffered from lack of a static period in which available data can be collected and reviewed, and that it is essential to clear thinking to create artificially such a period and to use it for the proper evaluation of the methods which we possess at the moment. It is with this object in view that I have ventured to suggest the lines on which I believe the attempt can be made.

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ANGINAL SYNDROME DUE TO HYPOTHYROIDISM

BY G. E. BEAUMONT, D.M. Oxfd, F.R.C.P.
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CLINICAL CHEMICAL PATHOLOGIST TO THE HOSPITAL

IT does not appear to be generally recognised that typical symptoms of angina pectoris (including angina of effort) may be due to hypothyroidism and can then be relieved by thyroid extract. We have observed a patient for three years who affords a good example of this condition, which has seldom been described.

CASE-RECORD

The patient was a clerk, aged 44, who gave a history of measles as a child, influenza, and lumbago, but no serious illnesses. Anginal symptoms were first noticed in 1929. The pain was felt deep to the upper part of the sternum. It was then not very severe and came on after walking. It was relieved by eructation. For the next three years there was freedom from pain. Early in 1935 the pain was severe, and the patient could only walk a short distance in comfort. He attributed it to "a wind-pocket near the heart." He then consulted his doctor. The electrocardiogram showed no abnormality beyond left axis-deviation, the barium meal was normal, and the blood Wassermann reaction was negative. In May, 1935, he was sent to consult a cardiologist, who diagnosed "angina of effort." The heart was normal radiographically, and no further abnormality was found electrocardiographically.

On Nov. 4, 1935, the patient was examined by one of us (G. E. B.), for he was now almost totally disabled by the pain, which came on by day and by night, on walking, on eating, and even on sitting quietly in a chair. The pain prevented him from sleeping for several hours at a time. It was referred to an area deep to the upper part of the sternum, at the level of the second and third costal cartilages. It resembled a sensation of pressure, but there was no constriction round the chest. During the attacks the patient sweated and felt short of breath. They were usually relieved by trinitrin tablets. His habits were temperate; he smoked about a dozen cigarettes a day and took no alcohol. He had given up smoking for six weeks, without obtaining any relief.

His general condition was good, height 5 ft. 5½ in., and weight (clothed) 9 st. 13¼ lb. (highest known weight, 10 st. 8 lb.). His hair was normal, his complexion rather ruddy, and his skin not dry. There was nothing in his appearance to suggest myxœdema. He was alert mentally and physically. No abnormal physical signs were found. The heart was not enlarged, clinically or radiologically (fig. 1); the pulse was regular and the pulse-rate 60, and the blood-pressure was 125/70.

He was admitted to the Middlesex Hospital on Nov. 24, 1935, for further investigation. His basal metabolic rate (B.M.R.) was −33 (Aub Dubois standard) on Dec. 3, 1935. The blood Wassermann reaction was negative. Cholecystography and a barium swallow both gave normal results. The blood-sugar curve was slightly low. The fasting blood-sugar was 100 mg. per 100 c.cm. After 50 g. of glucose by mouth the blood-sugar did not rise above 125 mg. per 100 c.cm. During the test no sugar and no acetone bodies were found in the urine. A blood-count gave the following figures:—

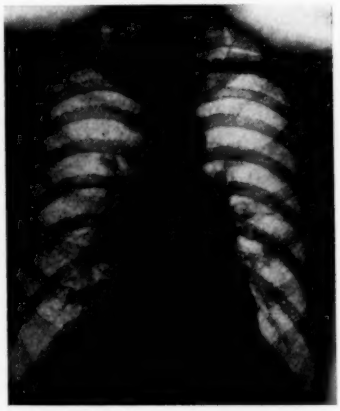
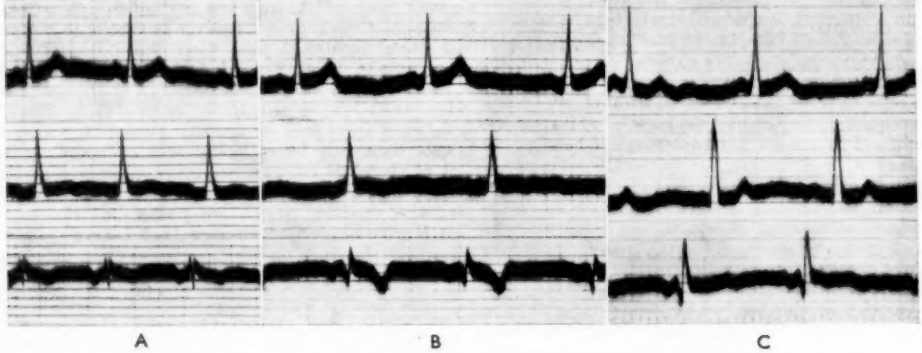


FIG. 1—Radiogram of heart in angina due to hypothyroidism. No enlargement is evident.

Red cells ..	.. 5,950,000	Polymorphs ..	.. 73%
White cells	.. 5600	Lymphocytes	.. 24%
Hæmoglobin	.. 102%	Monocytes ..	.. 1%
		Eosinophils ..	.. 2%

The red cells were normochromic and slightly microcytic. A fractional test-meal gave a high climbing curve (probably due to pylorospasm). Radiography of the chest revealed no abnormality in heart, aorta, or lungs. An electrocardiogram on Dec. 5, 1935, showed left axis-deviation, T_1 normal, T_2 biphasic, and T_3 inverted (fig. 2A). The patient's temperature was subnormal.

In view of the fact that a few cases of angina due to myxœdema had previously been treated as described later, we decided to try the effect of thyroid



A B C

FIG. 2—Electrocardiograms in angina due to hypothyroidism. (A) T_1 normal, T_2 biphasic, T_3 inverted (Dec. 5, 1935). (B) T_1 upright, T_2 slightly inverted, Q_3 pronounced, T_3 sharply inverted (Jan. 3, 1936). (C) T_1 and T_2 upright, Q_3 slight, T_3 small and upright (April 29, 1938). All three electrocardiograms show left axis-deviation.

extract. A daily dose of gr. 4 was followed by much improvement, the patient being completely free from pain for five days. By Dec. 12, 1935, however, the B.M.R. had risen to −1 (Aub Dubois) and the patient was worse than on admission. The thyroid extract was omitted, and some relief was obtained with trinitrin tablets, Luminal, aspirin, and Nepenthe. By Dec. 24, 1935, the B.M.R. had fallen to −12 (Aub Dubois) and the patient was considerably better. An electrocardiogram (E.C.G.) on Jan. 3, 1936, showed T_1 upright, T_2 slightly inverted, Q_3 pronounced, and T_3 sharply inverted (fig. 2B). The electrocardiographic findings were those associated with ischæmic changes in the myocardium, such as might be due to repeated attacks of coronary spasm. The patient was now comparatively comfortable and very sanguine about his recovery with thyroid treatment. He left the hospital on Jan. 4, 1936, and was ordered thyroid gr. ¼ every third day. B.M.R. determinations and electrocardiograms have been subsequently made by us at intervals during the next two years and ten months. The B.M.R. readings and thyroid dosage are shown graphically in fig. 3.

PROGRESS REPORTS

Feb. 5, 1936.—Patient is working and has had very good days and nights. No anginal pain since his return from hospital. Walks half a mile at a time. No trinitrin tablets for six weeks. Still taking luminal gr. ½ thrice daily and aspirin gr. 10 and nepenthe 20 minims at night. Thyroid gr. ¼ every third day B.M.R. −18 (Aub Dubois). E.C.G. shows T_1 and T_2 upright, Q_3, T_3 present, but T_3 less pointed (E.C.G. improving).

April 4.—Patient has been feeling "better every day." Full work in office. Can walk a mile or so. No pain. Taking luminal gr. ½ twice daily, but no aspirin and no nepenthe. Thyroid gr. ¼ every other day. B.M.R. −16 (Aub Dubois). Pulse-rate 58. Blood-pressure 120/80. E.C.G. shows T_1 upright, T_2 inverted, Q_3 not present, and T_3 slightly inverted (E.C.G. improving).

June 5.—Patient reported on May 4, 1936, that he was feeling "better every day." Taking thyroid gr. ¼ two days out of three. After May 14, 1936, not so well, some pain. Increased thyroid to gr. ¼ daily. Still some attacks of pain by day and night. Taking luminal gr. ½ twice daily and occasionally trinitrin. B.M.R. −22 (Aub Dubois). Pulse-rate 56. Blood-pressure 120/70. E.C.G. shows T_1 upright but flat, T_2 inverted, Q_3 again present, and T_3 more deeply inverted but blunt (E.C.G. worse).

June 20.—Has had two bad weeks with attacks of pain by day and night. Thyroid gr. ¼ thrice daily. Has discontinued luminal. B.M.R. −25 (Aub Dubois). Pulse-rate 60. Blood-pressure 104/70. E.C.G. shows T_1 upright, T_2 biphasic, Q_3 present, and T_3 sharply inverted (E.C.G. worse).

August 22.—Patient feels not very good. The days are much better than the nights. Has increased thyroid, first gr. ¼ thrice daily, then gr. ½ four times daily, and then gr. 1 thrice daily. The last-mentioned dose made him much worse, with pain by night and day, radiating to the region of the right carotid artery. He is now taking thyroid gr. 1 daily. B.M.R. −24 (Aub Dubois). Pulse-rate 60. Blood-pressure 112/70. E.C.G. shows T_1 flat, T_2 upright, Q_3 marked, T_3 flat (E.C.G. slightly better).

Dec. 5.—Patient reported on Oct. 1, 1936, that he felt fine—like his old self. On Nov. 4, 1936, he was walking 2–2½ miles a day. In December he said, "What a transformation in a year." He was then taking thyroid gr. ¼, ½, and ¼ daily. B.M.R. −20 (Aub Dubois). Pulse-rate 56. Blood-pressure 116/76. E.C.G. shows T_1 flat, T_2 biphasic, Q_3 slight, T_3 slightly inverted (E.C.G. better).

May 15, 1937.—He feels remarkably well. No pain. Thyroid gr. ¼ thrice daily. B.M.R. −5 (Aub Dubois). Pulse-rate 54. Blood-pressure 114/76. E.C.G. shows T_1, T_2, and T_3 upright, and Q_3 slight (E.C.G. better).

Oct. 29.—He says that he "feels A1" and "sings in the bath." Thyroid gr. ¾ daily in three divided doses. Patient tried reducing the thyroid and the pain returned. B.M.R. −25 (Aub Dubois). Pulse-rate 56. Blood-pressure 112/68. E.C.G. shows T_1 upright, T_2 flat, Q_3 slight, and T_3 inverted (E.C.G. slightly worse).

April 29, 1938.—He says, "I have made a wonderful recovery." No pain. Thyroid gr. ¼ four times a day. B.M.R. −18 (Aub Dubois). Pulse-rate 64. Blood-pressure 128/80. E.C.G. shows T_1 and T_2 as good upright waves, Q_3 slight, and T_3 small and upright (fig. 2C) (E.C.G. better). Weight (clothed) 9 st. 11¾ lb.

Nov. 7, 1938.—He feels very well. Has climbed 199 steps. No limitation to walking, and has run, playing children's cricket. Thyroid gr. ¼ four times a day. B.M.R. −16 (Aub Dubois). Pulse-rate 56. Blood-pressure 128/74. E.C.G. shows T_1 rather flat, T_2 upright but small, Q_3 slight, and T_3 small and upright (E.C.G. slight change). Weight (clothed) 9 st. 12¾ lb.

All electrocardiograms show left axis-deviation.

DISCUSSION

Since Ord (1880) described the heart of a myxœdematous patient as being flabby and dilated, the cardiac manifestations of hypothyroidism have been noted by several observers, including Zondek (1918), Assman (1919), Fahr (1925 and 1927), and White (1937). The fully developed syndrome includes:

(1) Heart markedly dilated to the left and right.
(2) Dyspnœa on exertion.
(3) Anasarca.
(4) Passive congestion of the lungs and liver.
(5) Sluggish action of the heart.
(6) Abnormalities in the electrocardiogram, including a uniform flattening or inversion of all the T waves.
(7) Normal blood-pressure.

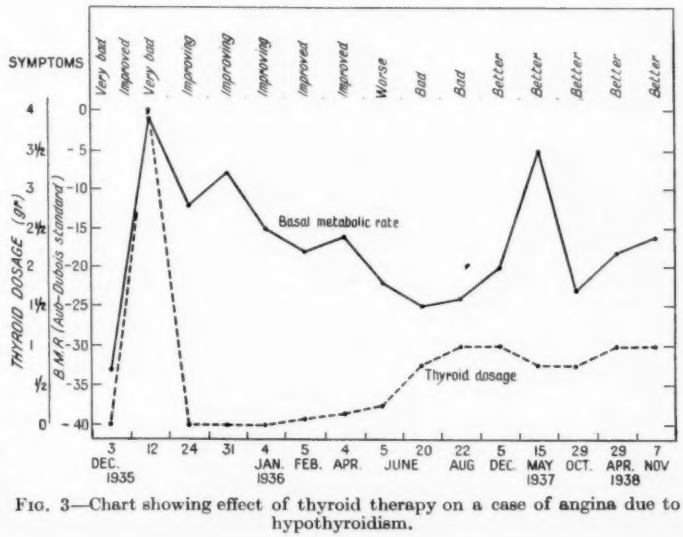


FIG. 3—Chart showing effect of thyroid therapy on a case of angina due to hypothyroidism.

Under adequate treatment with thyroid extract there resulted:

(1) A return of the size of the heart towards the normal with the relief of the cardiac decompensation.
(2) A livelier action of the heart.
(3) Gradual increase of T deflections to normal.
(4) No change in blood-pressure.

The cause of the dilated heart is by no means clear, and it is quite independent of the electrocardiographic changes which appear in myxœdematous patients who do not show any cardiac enlargement. Besides the above, several other isolated observations have been made on cardiovascular changes which cleared up on adequate thyroid therapy. These included incomplete heart-block (Luten 1920) and complete heart-block with Adams-Stokes syndrome (Willius 1924).

There is another symptom which has received scanty attention—namely, angina pectoris. Apparently there are two distinct types of angina pectoris in myxœdema:

(1) A type which comes on only during treatment with thyroid and is not uncommon. It is believed to be due to the raising of the metabolism and blood-flow too rapidly, thus preventing the heart from keeping pace with the increased demands put on it. Support for this view is given by the morphological changes in the heart in experimental myxœdema in animals, as shown by Webster and Cook (1936), and in the necropsy findings of patients with spontaneous myxœdema (Sturgis 1926). Extensive atheroma of the aorta was found with arteriosclerosis of the smaller arteries all over the body, including the coronary vessels. Angina after thyroid therapy in myxœdema has been noted by White (1937), Christian (1937), Fahr (1932), Blumgart, Cargill, and Gilligan (1930), Sturgis (1926), and Means, White, and Krantz (1926).

(2) A type which comes on in myxœdema before the administration of any thyroid and is relieved by adequate doses of thyroid. It may be the most prominent symptom of the myxœdema. The cause of the angina is uncertain but several explanations have been given: (*a*) a myxœdematous infiltration of the nerve-cells of the supporting connective tissue (Hertoghe 1914); (*b*) the anæmia which often accompanies myxœdema (Sturgis and Whiting 1925 and Sturgis 1926); and (*c*) hypotonicity of the myocardium (Laubry, Mussio-Fournier, and Walser 1924).

Only a few instances of this second type of angina have been recorded:

Sturgis (1926) reported a male, aged 57, with typical features of myxœdema and with anginal attacks relieved by nitroglycerin. The B.M.R. was −37. The symptoms disappeared completely with thyroid treatment, but when the B.M.R. rose to −7 they reappeared. They again disappeared with a metabolism of −17 to −13. The heart was dilated.

Ziskin (1930) recorded a case of a woman, aged 43, with myxœdema, severe anginal attacks, and a B.M.R. of −28. The heart was very slightly enlarged. With adequate thyroid treatment the anginal symptoms disappeared.

Beach (1935) recorded the case of a woman, aged 62, who was diagnosed as suffering from angina pectoris, always worse in cold weather. Her symptoms were partially relieved by taking as many as 21 trinitrin tablets (gr. 1/100) daily. She presented typical symptoms of myxœdema, differing thereby from our case. A remarkable improvement was obtained by the administration of thyroid gr. 2 thrice daily. Subsequently her B.M.R. varied from −4 to −10. The electrocardiogram showed right axis-deviation, with T_1 negative and T_2 and T_3 iso-electric. The electrocardiogram returned to normal with treatment. The patient was kept free from all anginal attacks for several years with thyroid and was subsequently lost sight of.

Benestad (1937) described two cases, one a man aged 65, and the other a woman aged 34. Their B.M.R.'s were −46 and −16 respectively, and in both cases the heart was enlarged. The symptoms disappeared with thyroid treatment, relief being obtained in the first case with a B.M.R. of −27 and in the second at +1 to −3.

In all previously reported cases myxœdema was clinically obvious before the B.M.R. was estimated. In our case there was no clinical evidence of myxœdema, and this led to the initial diagnosis of angina of effort. In the treatment of this case it was important to determine with some nicety the proper dose of thyroid. Sufficient thyroid had to be given to raise the patient's metabolism above the myxœdema level to free him from anginal attacks. On the other hand, if sufficient thyroid was given to raise the metabolism above a certain height (in the region of −1 to +1), the anginal attacks reappeared (December, 1935). It appears that anginal symptoms in myxœdema may result either from spasm or sclerosis of the coronary arteries or from myxœdematous changes in the cardiac nerve-cells and muscle. With the former angina comes on after overdosage of thyroid, and with the latter the anginal symptoms are relieved by adequate thyroid treatment. The response of our patient to thyroid therapy suggests that both arterial and neuromuscular changes had taken place in the heart. On this hypothesis the anginal pains which were temporarily relieved by thyroid at the beginning of the treatment were due to myxœdematous changes in the cardiac nerves and muscle. Those which rapidly ensued with the continuance of the same dose of thyroid resulted from the arterial changes producing their effect as the B.M.R. rose to about −1, owing to the thyroid dose being too great. For a few days in July, 1936, the patient again took too much thyroid, with a recurrence of anginal symptoms due to the arterial changes. During the summer of 1936, with the B.M.R. about −25, the anginal symptoms could be explained on the supposition that the myxœdematous changes in the neuromuscular tissues of the heart had not yet completely responded to thyroid treatment. A year later, after continuous thyroid administration in small doses, although the B.M.R. again fell temporarily to about −23, the anginal symptoms did not recur. This was possibly because the myxœdematous changes in the cardiac muscle and nerves had improved as the result of the thyroid treatment. They would probably have reappeared if the B.M.R. had been allowed to remain at this low level for a further period. It seems probable that the optimal B.M.R. in this case is between −10 and −17.

SUMMARY

(1) A case is described which was originally diagnosed as angina of effort. No clinical evidence of myxœdema was found, but the B.M.R. was −33. Similar cases of the anginal syndrome associated with a low B.M.R. which we have been able to trace have all shown clinical evidence of myxœdema.

(2) Under adequate treatment with thyroid the patient was enabled to return to work and lost his anginal symptoms.

(3) With either over- or under-dosage of thyroid there was a recurrence of his symptoms.

(4) This case emphasises the fact that subtotal thyroidectomy for the relief of angina may incur

the danger of increasing the symptoms unless myxœdema and "masked hypothyroidism" have been excluded.

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CYCLOPROPANE "SLEEP" WITH PERCAINE SPINAL ANÆSTHESIA

IN MAJOR ABDOMINAL OPERATIONS

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WHAT is the best anæsthetic for major operations on the abdomen, especially the upper abdomen? For eight years we have sought a method that is safe for the patient, allows radical surgery, and satisfies the anæsthetist. We have tried gas-oxygen and ether with and without the passage of an endotracheal tube either nasally or orally; open ether and chloroform-ether mixtures with and without Magill endotracheal tubes; and local infiltration of the recti muscles with Novocain (procaine) with and without inhalation anæsthetics.

These methods were satisfactory to a point, but for one reason or another something better was desired. In latter years Percaine spinal anæsthesia has been used with promising results, justifying further investigation to overcome the inevitable fall in blood-pressure, the nausea, retching, and vomiting during the intra-abdominal manipulation, and the psychological shock in the more nervous patients.

The nausea, retching, and vomiting occurred during the manipulation of the stomach or the duodenum, or in fact any of the viscera in the upper abdomen. It was particularly noticeable during exploration of the gall-bladder and bile-ducts and during rapid changes in the blood-pressure, such as a fall during the above examinations and a rapid rise after the intravenous injection of ephedrine.

These complications were alleviated by the administration of a mixture of carbon dioxide (5–15 per cent.) with oxygen for two or three minutes. But though this usually stopped the nausea, it caused a deterioration in the patient's psychological condition.

The psychological shock due to the patient's instinctive distaste of consciousness during his operation was a persistent and undesirable feature. Attempts were made to minimise it with various combinations of pre-anæsthetics, such as Omnopon and scopolamine (hyoscine), Nembutal, Avertin, and rectal paraldehyde, but no preparation was consistently satisfactory. Some patients remained alertly apprehensive throughout the operation, and for them nothing short of general anæsthesia was effective.

A visit to the Lahey Clinic in Boston, U.S.A., revealed that abdominal operations there were carried out under spinal analgesia produced by Pantocain (Decicain), often combined with cyclopropane general anæsthesia. The patients never had any of the complications just described; so we conducted a series of operations under combined spinal percaine anæsthesia supplemented by cyclopropane general anæsthesia. The observations began on Jan. 1, 1937, and were so satisfactory that we decided to report our favourable experience.

THE PRE-ANÆSTHETIC

Before induction the patient receives what we call the "triple injection"—namely, omnopon gr. $\frac{1}{3}$, scopolamine gr. 1/150, and Coramine 0·85 c.cm. (half an ampoule).

This makes most patients drowsy and puts a few to sleep, but on some it seems to have little effect. This dose of omnopon and scopolamine was chosen because we have found that larger amounts—e.g., omnopon gr. $\frac{2}{3}$, scopolamine gr. 1/100—depress the respiratory and cardiac centres, in some cases to a pronounced degree, particularly in patients over 60, rendering some comatose, and that sometimes apparently normal persons are hardly affected or react unusually to opium by vomiting or by shallow and infrequent respiration.

The coramine, a central cardiac and respiratory stimulant, is added to neutralise the depression of the respiration. We find the smaller doses mentioned, plus an individual explanation and assurance to the patient about the impending operation, consistently satisfactory. The mental tranquillity attained by heavy narcotisation is not commensurate with the risks of difficulty during the operation and of post-operative vomiting and pulmonary complications.

THE SPINAL ANÆSTHETIC

The agent used was a solution of 1 in 2000 percaine throughout. It was given by two techniques, each tried for six months.

Technique 1 (the "head-down foot-down" method) was developed from Howard Jones's technique (Jones 1930). The dose varied according to the level of the operation, 16 c.cm. (the maximum) being used for a gastric or gall-bladder lesion and 8 c.cm. for operations on the anus or the legs.

The puncture was made with the patient in the right or the left lateral position, the side of the operation always being uppermost—e.g., for a gridiron appendicectomy the patient lay on the left side. After injection of the anæsthetic the stylet was reinserted into the needle, the patient was turned on to his face, the head-piece of the operation table was lowered slightly, and the table as a whole was tilted foot-down, so that the patient was in a head-down foot-down position, the highest point being the second and third dorsal spines. The amount of tilt was just short of enough to slide the patient off the table. This position was maintained for 5–15 minutes; after 5 minutes the duration seemed to be immaterial, the result being invariably satisfactory.

The needle was kept in the theca until just before the patient was turned face upwards; this prevented the percaine from leaking from the puncture into the perithecal tissues before anæsthesia was effected. The head was kept low throughout, a vital point.

When the operation was on a strictly localised area, such as a gridiron appendix, the kidney, or an inguinal

hernia, after the injection the patient was kept in the lateral position and not turned on the face, the table being again arranged with the head and the feet down. A very satisfactory hemi- or quadri-anæsthesia followed; the muscle power and some sensation were still present in the lower side.

After 5–15 minutes the patient was placed in the position for operation, the cyclopropane was started, and the operation began shortly afterwards.

Technique 2 was begun in July, the head-down foot-down method being discontinued for the four following reasons:

(1) There was some difficulty in making the puncture with the patient lying in the lateral position, particularly in fat and elderly patients, except by those especially skilled.
(2) The lifting and moving entailed were sometimes irksome because of the patient's weight, the shortage of nurses, and the psychical trauma.
(3) Some patients with stiff spines did not give a good head-down foot-down position.
(4) The method was unsuitable for perforated peptic ulcers and general peritonitis, the movement being detrimental to the patient.

Technique 2 was based on that of Etherington Wilson (1934), the percaine still being a solution of 1 in 2000 and the dose 16·5 c.cm. for the high levels, with a corresponding reduction for lower operations. The injection was made with the patient in the sitting position, and the time of sitting up was 65 seconds for the high procedures and for small doses the last two figures of the dose—e.g., 40 seconds for 14·0 c.cm. and 20 seconds for 12·0 c.cm.—the time being reckoned from the moment the injection was started.

This method also gave satisfactory results, although the anæsthesia was not quite perfect and the patient was never flaccid, some muscle tone usually remaining and both sensation and contractility apparently returning after 1½–2 hours.

In both techniques the puncture was made between the second and third lumbar spines, or the fourth and fifth for the bladder and anus, or the first and second for the breast.

THE CYCLOPROPANE ADMINISTRATION

The machine used on all these cases was a Heidebrink continuous-flow machine with a closed-circuit absorber. After the spinal anæsthetic had been administered and the patient replaced in the dorsal decubitus, the circuit was filled two-thirds full of oxygen and the mask applied to the patient's face, care being taken to avoid leakage of air under the face-piece. Cyclopropane was run into the circuit at the rate of 500 c.cm. a minute, until the required depth of anæsthesia was obtained. This was usually 1500–2000 c.cm., varying from case to case.

Very light surgical anæsthesia was all that was required. The lid-reflex was present throughout. In many cases it was necessary to add 250–300 c.cm. of cyclopropane from time to time, to maintain the necessary level of anæsthesia. Oxygen, about 450 c.cm. a minute, was generally necessary. Endotracheal tubes were never used.

The advantages of this method were as follows:—

(1) Nausea, retching, and vomiting during operation never occurred.
(2) Cyclopropane and oxygen, without the administration of any other drugs, were sufficient to raise the blood-pressure at least 10 mm. Hg.
(3) The breathing throughout was slow and smooth, maintaining tranquillity, which is so essential in upper abdominal surgery.
(4) Major thoracic postoperative complications were absent, because cyclopropane is non-irritating in such low concentrations. A few patients had a transient cough, but not sufficient to justify the label of "chesty" or pneumonia.
(5) There was a rapid return to consciousness with normal breathing permitting early aeration of the lungs.
(6) Cyclopropane has been proved non-toxic to the liver and has no ill effects on the kidneys.

In the dosage suggested, the concentration remains about 10–15 per cent. cyclopropane and 85–90 per cent. oxygen, and no toxic cardiac symptoms will be produced. No patient had any cardiac arrhythmia or sudden change in rate which could be attributed to the cyclopropane. There has been occasional but not severe vomiting.

SEDATION AFTER OPERATION

The postoperative sedative was morphine gr. ⅙ and coramine 0·85 c.cm., called the "twin injection." The morphine was never given without the neutralising cardiac and respiratory tonic, nor was it ever given in doses larger than gr. ¼. If necessary, it was repeated after two hours, but heavy narcotisation was avoided.

During the last two months heroin gr. 1/12 was substituted for the morphine apparently with satisfactory results; there was no specific objection to the morphine, nor was any advantage in heroin observed.

Before the postoperative dose was fixed, morphine gr. ¼ or omnopon gr. ⅔ was occasionally used, and sometimes alarming depression of the cardio-respiratory centres followed, occasioning great anxiety by the poor pulse and feeble respiration, and in one case of carcinoma of the breast a fatal coma followed. No such concern has arisen in hundreds of major operations since the adoption of the twin injection described above.

ANALYSIS OF OPERATIONS

The operations were as follows:—

Radical amputations of the breast for carcinoma	8
Posterior gastro-enterostomies	2
Partial gastrectomies	9
Cholecystectomies and explorations of the common bile-duct	7
Laparotomies and bowel resections (carc. coli)	9
Appendicectomies	13
Hæmorrhoidectomies	3
Kidney and ureter operations	6
Bladder and prostate operations	2
Testicle operation	1
Inguinal herniotomies (double or unilateral)	6
Femoral herniotomies	2
Excision of cartilage of the knee	1
Ligature and injection of varicose veins	1
Total	70

Technique 1 was used in 46 operations and technique 2 in 24.

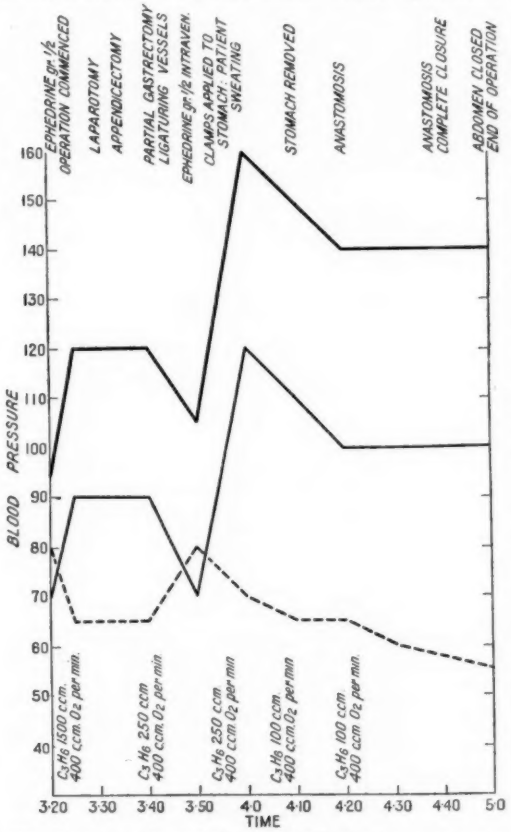
The results have been good. Three deaths occurred in the 70 cases and were due to (1) parotitis and general debility four weeks after a complete gastrectomy (technique 2) for a high ? malignant gastric ulcer; (2) hæmorrhage, 72 hours after a partial gastrectomy (technique 2) for a gastric and duodenal ulcer, due to a change in the method of suturing, which has since been abandoned; and (3) a subphrenic abscess three weeks after a partial gastrectomy (Billroth I by technique 1), for a gastric ulcer. These deaths after partial gastrectomy were out of a series of 30 patients; the others are not included, because cyclopropane was not used.

COMMENTS

The fall in blood-pressure was common to both techniques; perhaps it was rather more frequent and more pronounced in technique 1. In few cases was preliminary ephedrine used, but in our experience the effect of gr. $\frac{1}{2}$–$\frac{3}{4}$ is so uncertain that its use is not justified. Charts recording the blood-pressure and pulse-rate of every case were kept, and, when the systolic pressure fell to 80 mm. Hg, ephedrine gr. $\frac{1}{2}$ was injected intravenously and approximately restored the normal level in 30 seconds. These intravenous injections of ephedrine were developed by us in 1933 and have been used continuously since, with consistently good results. Ephedrine is never administered subcutaneously or intramuscularly, for with a depressed blood circulation its action is slow and uncertain. Cyclopropane tends to keep the blood-pressure from falling.

Patients have expressed satisfaction with the pleasant sleep induced, and the elimination of psychical trauma tends to prevent the development of shock.

The absence of severe pulmonary complications is attributed to the care taken before operation; maintenance of blood-pressure throughout the operation, thus avoiding a pre-shock condition; rapid return of consciousness, with the cough reflex, when the operation is finished; rarity of vomiting (a few patients vomited after operation, but these were exceptional and always provoked comment for this reason); periodic (four-hourly) ventilation of the lungs with O_2 and CO_2 during the first twenty-four hours; and cautious postoperative use of morphine and hyoscine.



Blood-pressure chart during partial gastrectomy on a man of 45. The thick line (top) represents the systolic pressure, the thinner line the diastolic pressure, and the interrupted line the pulse pressure. Before operation the patient had omnopon gr. 1/3, scopolamine gr. 1/150, and coramine 0·85 c.cm. The anæsthetic was 14·5 c.cm. of 1 in 2000 percaine (injected at the 3rd–4th lumbar interspace with the patient in the head-down, foot-down position) plus cyclopropane and oxygen in the quantities shown.

The spinal anæsthesia, techniques 1 and 2, allows radical surgery with a good exposure. With technique 2 the injection is easier, but the anæsthesia and muscle relaxation tend to wear off sooner than with technique 1. In the 1938 programme modifications have been introduced to overcome this.

The 1 in 2000 solution of percaine was used with the object of reducing the amount of toxic drug and of enhancing the factor of an anæsthetic medium lighter than cerebrospinal fluid, thereby exploiting further Howard Jones's principles. Both expectations were realised, and quadrilateral and hemi-anæsthesias were made possible. A further hope, which was not fulfilled, was that the vasoconstrictor nerves might be more resistant to the 1 in 2000 solution than to a 1 in 1500 solution, and that the fall in blood-pressure would be lessened.

The radical amputations of the breast were smoothly and expeditiously performed with this combination of anæsthetics. Pantocain was injected above the clavicle, because the suprasternal, supraclavicular, and supra-acromial nerves are not included in spinal anæsthesia.

Postoperative headaches after spinal anæsthesia are a tiresome complication. The technique described here does not abolish them; they occur in 5–10 per cent. of cases, but they yield to the following remedies, tried in this order:—

(1) A.P.C. (aspirin, phenacetin, caffeine) tablets and ephedrine gr. $\frac{1}{2}$ by mouth four-hourly for two days.

(2) Sodium chloride, 20 c.cm. of a 30 per cent. solution, injected intravenously and repeated once more if necessary. Patients are warned that an initial aggravation with a sensation of heat and hot flushing for 20–30 minutes will occur, after which relief follows.

(3) The patient is placed in the extreme Trendelenburg position for 30–60 minutes once or perhaps twice.

We have never seen these measures fail to give relief.

SUMMARY

(1) A combination of percaine spinal with cyclopropane general anæsthesia was used in seventy major operations, mostly abdominal.

(2) The pre-anæsthetic used throughout the series was omnopon gr. $\frac{1}{3}$, scopolamine gr. 1/150, and coramine 0·85 c.cm.

(3) The spinal anæsthetic was a 1 in 2000 solution of percaine.

(4) The general anæsthetic was cyclopropane delivered through a Heidebrink continuous-flow machine. Oxygen was usually necessary.

(5) The advantages of this method are the tranquil respiration, a rapid return to consciousness, and the absence of nausea and vomiting during the operation and of major thoracic postoperative complications. Cyclopropane tends to keep the blood-pressure from falling and has no toxic effect on the liver or the kidneys.

(6) The postoperative sedative was morphine gr. $\frac{1}{6}$ (or alternatively heroin gr. 1/12) and coramine 0·85 c.cm.

(7) Three patients died: one after a complete gastrectomy; two after a partial gastrectomy.

(8) The addition of cyclopropane "sleep" to spinal anæsthesia is an undoubted improvement, a pleasant and effective anæsthetic for the patient, and a material aid to the surgeon in operations on the upper abdomen.

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PULMONARY TUBERCULOSIS

DISAPPEARANCE OF TUBERCLE BACILLI FROM SPUTUM DURING TREATMENT

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We have investigated the results of repeated sputum tests in 791 cases discharged from the Forster Green Hospital between Jan. 1, 1932, and May 31, 1938. The investigation includes all tuberculous patients with a positive sputum on admission who were treated in hospital for more than a hundred days, with certain exceptions enumerated below. Therefore it excludes a considerable number of far advanced cases in which the patient remained in hospital a short time or died soon after admission; also a small number of "early cases" in which the patient remained in hospital less than a hundred days. Eighteen cases in which tubercle bacilli were isolated from the sputum by culture only are excluded from the series. Forty-one other patients, who on admission showed tubercle bacilli only after petroleum ether concentration, are considered in a separate series. Four other cases are excluded which were negative on admission, direct and on concentration, but showed tubercle bacilli before discharge.

Procedure as regards sputum tests.—Three smears were examined on successive days unless the first or second smear was positive, and if all these were negative a petroleum ether concentration test was done. The same procedure was carried out at the end of every three months as long as the patient remained in hospital. In some cases it was not possible to do a test before the patient was discharged, because the patient had ceased to have sputum, even after a laryngeal-reflex test.

CLASSIFICATION AND TABULATION OF RESULTS

Three main groups have been differentiated according to the severity and extent of the lesions as seen on the initial radiogram.

Group A.—Discrete or limited areas of mottling in one or both lungs, without cavity (table I).

Group B.—Discrete or limited areas of mottling in one or both lungs, with cavity (table II).

Group C.—All cases with extensive and heavy areas of mottling, with or without cavity (table III).

A separate subdivision of these three groups has also been made in accordance with the treatment adopted (tables IV and V).

Group 1.—Artificial pneumothorax (A.P.) with some degree of collapse.

Group 2.—Phrenic avulsion or crushing.

Group 3.—All other cases.

The results have been tabulated in two ways: (1) at the end of six months' treatment (for simplification, those patients who remained in hospital more than a hundred days but less than six months are included with those who remained six months); and (2) on discharge from hospital. In the case of those patients who remained six months or less, the result at the end of six months and the result on discharge are, of course, the same. In the case of patients who remained in hospital more than six months the result at the end of six months and the result on discharge may differ. Very few of the patients remained in hospital more than twelve months, and none remained more than two years. The cases with no sputum after treatment are shown as "T.B. negative direct." The cases shown as "T.B. positive on concentration" were all T.B. negative on three consecutive tests before the concentration test was done.

Analysis of the group (41 cases) T.B. positive on concentration only.—Of these cases 23 belong to group A, 7 to group B, and 11 to group C. Artificial pneumothorax was done in 6 cases and phrenic avulsion or crushing in 6 cases. The results on discharge were as follows: 1 case T.B. positive by direct smear; 5 cases T.B. positive on concentration; 12 cases had no sputum before discharge from hospital; and the remaining 23 cases were T.B. negative after concentration. Thus it appears that the chances are good in this group for the disappearance of tubercle bacilli, and that collapse therapy is only indicated in a minority.

TABLE I—GROUP A, DISCRETE OR LIMITED AREAS OF MOTTLING IN ONE OR BOTH LUNGS, WITHOUT CAVITY (106 CASES)

Sputum	After 6 months or on discharge before 6 months		On discharge	
T.B. – (D.) ..	27	67%	28	77%
T.B. – (C.) ..	36		47	
T.B. + (C.) ..	8		7	
T.B. + (D.) ..	35	33%	24	23%

TABLE II—GROUP B, DISCRETE OR LIMITED AREAS OF MOTTLING IN ONE OR BOTH LUNGS, WITH CAVITY (174 CASES)

T.B. – (D.) ..	34	54%	48	72%
T.B. – (C.) ..	45		64	
T.B. + (C.) ..	15		13	
T.B. + (D.) ..	80	46%	49	28%

TABLE III—GROUP C, EXTENSIVE AND HEAVY AREAS OF MOTTLING, WITH OR WITHOUT CAVITY (511 CASES)

T.B. – (D.) ..	58	25%	76	38%
T.B. – (C.) ..	46		90	
T.B. + (C.) ..	25		27	
T.B. + (D.) ..	382	75%	318	62%

(D.) = direct; (C.) = concentrated.

COMMENTS

The results of repeated sputum examination show that there is a very considerable chance of tubercle bacilli disappearing from the sputum after a few months' treatment in "early cases," with or without cavity. Two-thirds of group A and more than half of group B became T.B. negative on direct examination within six months. The results appear to show

the advantage of A.P. in rendering the sputum negative, especially in view of the fact that the more severe cases in groups A and B had this treatment. Naturally group C shows inferior results, and it is here that the results of A.P. show the greatest superiority over the other groups. The effect of phrenic avulsion or crushing is much less, partly owing to the fact that this treatment has been reserved for unsuccessful A.P. cases and cases in which A.P. was contra-indicated. Cases in which the

TABLE IV—GROUPS A AND B COMBINED, WITH DISCRETE OR MODERATE LESIONS, WITH OR WITHOUT CAVITY, CONSIDERED WITH REFERENCE TO SPECIAL TREATMENT ADOPTED (280 CASES)

Sputum	After 6 months or on discharge before 6 months						On discharge					
	1 A.P.		2 P.A.		3 No collapse treatment		1 A.P.		2 P.A.		3 No collapse treatment	
T.B. – (D.)	31	% 64	7	% 35	23	% 60	46	% 86	10	% 53	20	% 63
T.B – (C.)	51		5		25		72		7		32	
T.B. + (C.)	13		—		10		10		1		9	
T.B. + (D.)	54	36	22	65	39	40	21	14	16	47	36	37
Total ..	149		34		97		149		34		97	

TABLE V—GROUP C, WITH EXTENSIVE OR HEAVY AREAS OF MOTTLING, WITH OR WITHOUT CAVITY, CONSIDERED WITH REFERENCE TO TREATMENT (511 CASES)

T.B. – (D.)	43	% 36	8	% 12	7	% 15	54	% 55	12	% 18	10	% 18
T.B. – (C.)	37		5		4		77		9		4	
T.B. + (C.)	17		2		6		19		2		6	
T.B. + (D.)	176	64	112	88	94	85	123	45	104	82	91	82
Total ..	273		127		111		273		127		111	

phrenic operation has been combined with A.P. are tabulated in the A.P. group.

It is unwise to conclude that any special form of treatment for pulmonary tuberculosis, such as tuberculin, Sanocrysin, or A.P., has specific therapeutic action on the grounds that many cases with early or moderate lesions become negative after such treatment. It appears that a considerable proportion of "early cases" will become negative after ordinary sanatorium treatment.

During the past few years it has been customary in the Forster Green Hospital to give early T.B. positive cases at least three months' rest in bed, and in our opinion this practice has helped to improve the results. An effort has also been made to persuade patients to rest in bed pending admission, and the results of treatment have been strikingly better in those who have followed this advice.

SUMMARY

(1) The results are analysed of repeated sputum tests for the presence of tubercle bacilli in 791 cases of pulmonary tuberculosis classified according to lesions and treatment. (2) The results show that (*a*) there is a very considerable chance of tubercle bacilli disappearing from the sputum after a few months' treatment in early cases; (*b*) artificial pneumothorax helps to render the sputum free from tubercle bacilli; and (*c*) phrenic avulsion or crushing has much less effect than artificial pneumothorax in rendering the sputum free from tubercle bacilli.

STRICTURE OF THE SMALL INTESTINE

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STRICTURE of the small intestine receives but scant attention in medical text-books. Admittedly it is not common, and symptoms associated with it are sufficiently vague to render diagnosis difficult; nevertheless the importance of early diagnosis is manifest, so that the patient may avail himself of surgical treatment.

ÆTIOLOGY

The low incidence of stenosis of the small bowel, compared with that of the large bowel or of the stomach, is explained by the tendency to non-sclerosing healing of specific ulcerations (except tuberculous ulcers) and by the relative rarity of malignant tumours of the small intestine.

The causes of stricture of the small intestine can be dealt with under three headings: congenital abnormalities; cicatricial contractures of destructive lesions; and neoplasms.

Congenital abnormalities.—Strictures due to defective development are usually situated at the junction of the fore- and mid-gut; they are also found in association with a Meckel's diverticulum, resulting either from ulceration of the gut at the opening of the pouch or from simple narrowing at or above the origin of the diverticulum.

Cicatricial contractures may be of various origin:—

Injury to the small intestine causing contusion or rupture may be followed by a fibrous stricture. Strictures at the site of a purse-string suture, anastomosis, or constricting groove of a strangulated hernia have also been described.

Tuberculosis of the small intestine is probably the most important of all the causes. Both the so-called primary (hyperplastic) and secondary (ulcerative) lesions are probably always secondary to a focus in the lungs, mediastinum, or mesentery, although in the more uncommon hyperplastic type the focus is often latent. The ulcerative form is not uncommonly a complication of active pulmonary disease; this is confirmed by the figures given by Brown and Sampson (1932), showing that the intestines are tuberculous in 50–80 per cent. of patients dying of pulmonary tuberculosis. Stenosis of the intestine develops in comparatively few cases because death ensues before the ulceration can heal. It is the subacute and chronic types of tuberculosis which ultimately lead to stricture; this is seen always in the hyperplastic type and occasionally in the ulcerative type when the primary lung condition is not lethal. Chronic hyperplastic tuberculosis localised to the small bowel is extremely rare, the cæcum and ascending colon being usually affected; up to 1934 7 cases had been described by Counseller (1934) and 1 case by Chi (1934). Chronic ulcerative tuberculosis more commonly affects the distal portion of the ileum but may spread beyond the ileocæcal valve to the cæcum, appendix, or ascending colon. White and Jankelson (1932) and Muir (1934) also described tuberculous strictures of the jejunum.

Both the hyperplastic and the chronic ulcerative types are important in that chronic obstruction of the small bowel is not uncommon, although in the hyperplastic type there is also some obstruction in the cæcum and ascending colon. The appearance of the bowel depends on the stage of the disease. The more active stage shows the typical encircling ulceration, gross thickening of the bowel wall with miliary

tubercles in the peritoneum, and enlarged mesenteric glands. The more chronic cases show numerous peritoneal adhesions, cicatricial contractures of the bowel, dilated bowel between the strictures, and hypertrophy proximal to these strictures.

Non-specific granuloma, mistaken in the past for tuberculosis and first recognised as a clinical and pathological entity by Crohn (1932), has been described under various titles, including regional ileitis and localised hypertrophic enteritis. Erdman and Burt (1933) in a report of several cases of this condition attribute the first description of this disease to Braun in 1909. Colbeck, Hurst, and Lintott (1937) recently reviewed the subject and described further cases. In this condition the last 2 ft. of the ileum is grossly thickened, all layers of the gut being chronically inflamed. The mucous membrane may be ulcerated, especially on the mesenteric border. It is stated that an important point of differentiation from tuberculosis is the relative absence of adhesions. External fistulæ and perforation into other loops of small bowel or colon have also been described. Superadded fibrosis converts the affected portion of ileum into a rigid narrow tube, at which stage intestinal obstruction may arise. The earlier symptoms are said to resemble those of acute appendicitis or of ulcerative colitis.

Other destructive lesions of the small intestine rarely cause stenosis. Syphilis and actinomycosis are extremely uncommon, and typhoid ulcers usually heal with minimal scarring, although there is always the possibility of a stricture after perforation and/or repair of a typhoid ulcer.

The third cause of stenosis is *neoplasms* :—

The rarity of *carcinoma* of the small intestine is exemplified by the figures given by Rankin and Mayo (1930) and Vick (1932). Rankin and Mayo found that 0·062 per cent. of carcinomas of the alimentary tract affected the small bowel, and, included in Vick's statistics of acute intestinal obstruction, out of 899 cases of carcinoma of the intestine 17 cases (1·89 per cent.) affected the small intestine. The tumour is usually situated at the lower end of the ileum and may be stenosing, polypoid, ulcerative, or multiple. Degenerative changes may also occur. Microscopically the tumour is an adenocarcinoma with a varying amount of fibrous stroma.

Sarcoma is rarely found in any portion of the alimentary tract but is probably commoner in the small than in the large bowel. It may be polypoid or annular, and microscopically it may consist of round or of spindle cells or be a lymphosarcoma. Ullman and Abeshouse (1932) recorded 1 case and collected 125 others, in addition to 250 collected by Graves in 1919. These authors state that sarcoma is twice as common in the small as in the large intestine, males are affected more commonly than females, and the average age is thirty-three. Aneurysmal dilatation of the lumen at the site of the growth has also been described.

Carcinoid tumours are extremely rare in the ileum, the appendix being the commonest site. Wood (1936) stated that 152 cases had been recorded up to the latter part of 1934.

Innocent tumours (benign polyps) are rare and unlikely to cause stenosis.

SYMPTOMS AND SIGNS

The clinical picture of chronic obstruction of the small bowel is always the same, whatever the underlying pathology.

Abdominal pain is the earliest symptom but its quality and site are not characteristic. It is usually colicky, although in inflammation it may be more of a dull ache. Occasionally the patient complains of a feeling of distension. The pain may be situated almost anywhere in the abdomen. In the first of our cases epigastric pain was complained of, whereas in the second the pain was located in the right iliac fossa. A study of conditions reported as causing obstruction of the small intestine showed that the site of the pain did not indicate the portion of bowel affected or the underlying pathological process. Pain has been described in the right iliac fossa, epigastrium, umbilical region, and hypogastrium and may be related to meals. Vomiting, when present, has been described as relieving the pain. At first the attacks of pain occur at intervals of weeks or months, later becoming more frequent. If, as in one of our cases, acute obstruction supervenes, the pain is persistent and colicky. The duration of symptoms varies from months to years in chronic inflammation, such as is seen in the common form of tuberculosis, and about three to six months in malignant disease.

Vomiting was absent in one of our cases, in spite of a three years' history of abdominal pain, and occurred in the second case only when acute obstruction came on. The absence of vomiting in our cases appears to be unusual, for in most of the reported cases of tuberculous or cancerous strictures of the ileum vomiting was common though fairly late. In one case of carcinoma of the ileum described by Wakeley (1932) the patient noticed in the vomit particles of food which had been eaten several days previously.

Bowel action.—We were surprised to find the frequency with which constipation was reported in various conditions causing stenosis of the small bowel. It appears to us that, in view of the fluid contents of the small bowel, there is no reason why constipation should occur before the obstruction is severe. This was certainly so in both of our cases; constipation was absent in one and occurred in the other only with the onset of acute obstruction. Diarrhœa may be present in active inflammation—for example, tuberculosis in an acute phase—when rapid emptying of the small bowel takes place.

Other symptoms.—Anorexia, malaise, loss of weight, and febrile bouts may be early symptoms; but these are typical of tuberculosis or of carcinoma anywhere in the body.

Physical signs.—Anæmia and signs of recent loss of weight are not uncommon, suggesting an organic lesion. Examination of the chest even in tuberculous stenosis is usually negative.

Abdominal examination.—In the early stages it is unlikely that abdominal examination will reveal any abnormality. When obstruction becomes more severe, distension may be obvious, especially in the umbilical and upper abdominal regions. It is only in the later stages that distended coils of intestine with a ladder pattern and visible peristalsis are seen. Palpation may reveal a tumour, especially in the right iliac fossa, the palpable mass being either inflammatory or neoplastic. More frequently there is nothing more than muscular rigidity and tenderness, especially in an active tuberculous lesion. In the more advanced cases auscultation may be of value in diagnosing obstruction. Burgess (1932) called attention to the value of this sign, so often neglected. The loud gurgling was well heard in one of our cases.

Stools.—In carcinoma of the small bowel there may be melæna, or more commonly the blood is occult. The stools should always be examined in a case of abdominal pain, for the presence of occult blood strongly suggests an active ulcerative lesion; but the occult-blood test may be positive when intestinal adhesions alone are present. Tubercle bacilli should be looked for but are rarely found except in fairly advanced pulmonary tuberculosis.

Radiological examination.—A barium sulphate meal, although its value has been disputed, is probably the

best method of early diagnosis. Only a little barium should be swallowed, for it is difficult to obtain a clear outline of the small intestine. A small quantity of barium emulsified with liquid paraffin may be given. Gage (1937) gives 4 oz. of a barium-water mixture, the patient being kept prone throughout the examination and examined radiologically at hourly intervals up to five or six hours. The important points to look for are (1) dilatation of the small bowel above the stricture with slow transit of the barium; (2) vigorous painful peristalsis ending at the site of obstruction; (3) filling defect and narrowing at the site of the lesion; and (4) fatigue distension of the obstructed coils. When obstruction is advanced, a straight radiogram of the abdomen may be useful, as in acute intestinal obstruction. The patient is examined recumbent for gas patterns and standing for fluid-levels. Obstruction at or above the cæcum is indicated by the absence of a gas-filled colon and by fluid-levels and gas patterns in the small intestine. Radiography of the chest should be included in the investigation. Enlarged hilar glands, with old or recent apical lesions, would suggest tuberculosis of the small bowel.

DIFFERENTIAL DIAGNOSIS

The diagnosis of chronic obstruction of the small bowel, especially in the early stages, can be made only after full investigation. The abdominal pain is indefinite, and the action of the bowels may or may not be disturbed. The symptoms may simulate chronic appendicitis, which can only be excluded by a barium meal. Indeed, this examination is essential for diagnosis and should always be performed when a patient complains of chronic abdominal pain and the stools contain occult blood. The palpable mass in the right iliac fossa and/or a filling defect of the ileum should suggest a tuberculous or carcinomatous lesion. Evidence of a recent or an old pulmonary lesion would suggest tuberculosis, especially in a patient under forty. Even at operation it may be difficult to decide whether the lesion producing the obstruction is due to tuberculosis, carcinoma, or regional ileitis, and the ultimate diagnosis will be left to the pathologist.

CASE-RECORDS

CASE 1.—A male Hindu, aged 45, was admitted to the Kolar Gold Fields Hospital on Sept. 17, 1937, complaining of abdominal pain. For the past three years the patient had had indefinite pain in the right iliac fossa at intervals of a fortnight to six months and lasting about two hours; it was not related to meals, and relief occurred spontaneously. For the previous six months the pain had become more severe and of longer duration, and the patient noticed that he was losing weight. There had never been constipation, diarrhœa, or vomiting. There was no history of cough.

The patient showed obvious signs of recent loss of weight and looked ill. His temperature was 98·2° F. and his pulse-rate 80. The tongue was dry and furred, and the heart and lungs showed no abnormality. The abdomen was not distended, and a tender mass with an indefinite outline was palpable in the right iliac fossa but could not be felt on rectal examination. No abnormal constituents were found in the urine.

Investigations.—Three stools were examined but no occult blood and no tubercle bacilli were found (Antiformin method). Blood examination showed hæmoglobin 60 per cent.; red cells, 4,000,000 per c.mm.; colour-index, 0·75; white cells, 8000 per c.mm. (polymorphonuclears 66 per cent., lymphocytes 24 per cent., large mononuclears 2 per cent., and eosinophils 8 per cent.).

Radiography of the chest showed no enlarged mediastinal glands and no sign of healed or active tuberculosis. The patient was examined four hours after swallowing 10 oz. of a watery emulsion of barium sulphate; this was seen to have reached the transverse colon; a narrowing of the terminal ileum was visible with some distension of the ileum proximal to the filling defect. The cæcum appeared to be deformed and contracted (fig. 1).

The patient was kept under observation for a fortnight, during which he was slightly feverish, with

FIG. 1—Radiogram taken four hours after barium meal showing that barium sulphate has reached transverse colon, which is adherent to small intestine. Arrow marks site of stenosis. Ileum proximal to stenosis is dilated, and capacity of cæcum is diminished.

a temperature of 99°–100° F. His general condition slowly deteriorated, and it was thought that the narrowing of the terminal ileum seen in the radiogram justified an exploratory laparotomy to exclude carcinoma of the ileum or cæcum, although tuberculosis of this region was considered more probable.

Operation.—An exploratory laparotomy was performed on Sept. 23, 1937, through a right paramedian incision. The cæcum was found adherent to the posterior abdominal wall, and there were numerous adhesions between the ileocæcal region and the anterior abdominal wall. The terminal 6 in. of the ileum and cæcum were thickened, and small tubercles could be seen in the peritoneal coat. About 2 in. from the ileocæcal valve the ileum was circumferentially fibrosed, the mesenteric edge of the cicatricial ring being puckered and contracted. A few enlarged glands were present in the mesentery. A resection of the affected ileum and cæcum was considered, but it was thought that the patient was too ill to stand this. One of the enlarged glands was removed for section, and a simple appendicectomy was performed.

Microscopical examination of the mesenteric gland showed typical tuberculous giant-cell systems.

Course after operation.—The patient made a slow recovery, the pyrexia persisting for three weeks. He was treated on general antituberculosis lines. He stated that he was free from pain and felt much more comfortable after the operation. The action of his bowels was normal throughout his stay in hospital. Seen four months after the operation, he stated that he had put on a stone in weight and was free from abdominal pain; his general condition had obviously much improved. A barium meal repeated at this time showed very little change in the ileum and cæcum. He is being kept under observa-

tion, and, if symptoms or signs of intestinal obstruction recur, a partial resection of the ileum and right colon including the cæcum will be considered.

CASE 2.—A male Hindu, aged 45, was admitted to the hospital on Sept. 18, 1937, complaining of abdominal pain. The patient stated that he was quite well until four weeks before admission, when he began to have epigastric pains about ten minutes after eating food. The pain occurred once or twice on alternate days and persisted for half to one hour. The pain was relieved by drinking fluids. There had been no vomiting, and the patient said that there had been no alteration in his bowel actions or in the consistence of his usual two daily motions. After taking an aperient one day before admission the patient was seized with acute generalised abdominal pain, which was colicky (unlike his previous pain), and he vomited. He also complained of abdominal gurgling. The only illness of note in his past history occurred about nine years ago and necessitated a stay of two months in hospital. The diagnosis was "fever," and his symptoms had "slipped his memory."

The patient looked ill and wasted and was obviously in acute pain. The tongue was furred but moist. The heart and lungs showed no abnormality. The upper abdomen was distended but moved well on respiration. Neither peristalsis nor dilated coils of intestine could be seen. The whole of the right abdomen was very tender and rigid. The hernial orifices were normal, and no tumour was felt. Abdominal auscultation revealed loud rumblings, heard mainly round the umbilicus and upper abdomen. The rectum was not ballooned, and there was tenderness high up of the right rectal wall. No mass was palpated.

Operation.—A diagnosis of acute intestinal obstruction was made and the abdomen explored through a right subumbilical paramedian incision. Distended coils of the small bowel presented themselves through the incision and were traced to the last 2 ft. of the ileum, which was found firmly adherent to the peritoneum overlying the sacral promontory. The distended bowel ended abruptly about 6 in. from the ileocæcal valve, where the ileum was almost completely stenosed by a fibrous stricture. There was much hypertrophy proximal to the stricture. About 4½ in. of the small intestine, including the stricture, was resected and an end-to-end anastomosis performed. A small mesenteric gland was also removed.

The patient had a smooth postoperative course and is now back at underground work. Subsequent radiography of the chest revealed no abnormality.

Morbid anatomy.—The specimen consisted of 4½ in. of the ileum (fig. 2). There was a fibrous stricture 1½ in. from the distal end, the lumen of the bowel being almost completely obliterated at this point. About ½ in. distal to the stricture was an oval pigmented area denuded of normal intestinal epithelium, this area being about ½ in. wide and almost encircling the gut. All the layers of the intestine proximal to the stricture were much hypertrophied. The peritoneum was grossly thickened and covered with adhesion.

Microscopical examination of a section through the stricture showed the mucous membrane to be covered by normal columnar epithelium. The submucosa and muscular layers were infiltrated with lymphocytes, plasma cells, endothelial cells, and young fibroblasts. No tuberculous giant-cell systems were seen. Section of the removed gland showed normal glandular structure.

This case presents many interesting features. The stricture had evidently taken many months to develop, and the short period of symptoms of one month is surprising. To one working in the tropics it soon becomes apparent that the history given by a coolie can be grossly misleading, especially where time is concerned. It was therefore presumed in this case that symptoms were probably present much longer than the alleged one month. It was also thought possible that the febrile illness nine years ago might have been the acute stage of some inflammation of the bowel. At operation the stricture was thought to be carcinomatous, but subsequent examination of the portion of gut removed showed that it was not. The pigmented oval area was certainly the scar of a healed ulcer; the numerous adhesions and the thickened intestinal wall infiltrated with lymphocytes, plasma cells, and young fibroblasts strongly suggest a chronic inflammation which in healing had produced a fibrous stricture. In the absence of frank intestinal tuberculosis the differential

FIG. 2—Diagram of resected portion (4½ in.) of ileum showing stenosis (presumed tuberculous), oval depressed pigmented area (shaded), and hypertrophied intestinal wall.

diagnosis between tuberculosis of the lower ileum and Crohn's disease may present great difficulty, the macroscopic and histological pictures in the two conditions often showing striking similarity. Facts which pointed to the lesion in the present case having succeeded the ulcerative form of tuberculosis were, first, the presence of a healed, depressed, and sharply demarcated site of old ulceration, and second the well-defined limits of the stricture itself, which could easily be visualised as having followed the "girdle ulcer" described by Boyd (1938) as occurring in intestinal tuberculosis. This appearance is in contrast to the more widespread infiltrative change in Crohn's disease, which tends to give rise to "hose-pipe" stenosis.

This case is similar to one described by Chi (1934), who stated that up to 1934 only 11 cases of local tuberculosis of the ileum had been reported.

SUMMARY

Two cases of stenosis of the small intestine are described, one being a case of hyperplastic tuberculosis of the terminal ileum and the cæcum. The second case was presumed to be tuberculous, although the evidence was not conclusive. The chief symptom in both cases was abdominal pain, the other symptoms and signs being vague. A barium meal was a most important factor in diagnosis.

We acknowledge our thanks to the managers of the Kolar Gold Fields, Messrs. John Taylor and Sons, 6, Queen Street Place, London, E.C.4, for their permission to publish these cases.

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TREATMENT OF POSTENCEPHALITIC PARKINSONISM WITH BULGARIAN BELLADONNA

BY F. J. NEUWAHL, M.D. BERLIN, L.R.C.P.E.

IN a previous paper (1937) Fenwick and I described two cases of postencephalitic parkinsonism successfully treated with a decoction of Bulgarian belladonna root. The present communication summarises the experience we have since gained in treating a further 123 cases at the Law Nursing Home, Rochdale.

Lately Hill (1938) described the results of Bulgarian treatment in 14 patients at Maida Vale Hospital. He closely followed the instructions that the herbalist Ivan Raeff of Bulgaria sends out with the root and for this reason his results were not as good as they might have been. We have found that the large initial dosage that Raeff recommends may cause toxic symptoms serious enough to lead the doctor or the patient to abandon the treatment. The mental effects in particular that Hill encountered, such as confusion, hallucinations and delirium, would usually contra-indicate the use of Bulgarian belladonna in general practice.

PREPARATION AND POTENCY

We have discarded our original technique of preparing the decoction in white wine and now use a method of cold extraction. The activity of a solution prepared in this way does not decline after a few weeks as did the wine decoction and it does not produce the disturbing drunken feeling in the morning of which patients often complained. As Henricksen (1938) pointed out, the wine decoction varies somewhat in alkaloid content, whereas the content of the cold extraction is precisely known. We have slightly modified the process of making a cold extraction as outlined by Antolini (1937).

A watery solution containing 0·75 per cent. tartaric acid and 0·1 per cent. salicylic acid is used, and 16 grammes of root are added to each 100 c.cm. of this solution. A percolate is obtained after the root has macerated for 30 hours. A further quantity of solution equal to the amount of percolate obtained is then added to the root and it is again macerated for 24 hours and the extraction poured off. In the interests of economy this process can be repeated a third time. The three extractions are mixed and carefully filtered. On the average the first extraction contains 0·09–0·1 g., the second 0·06 g. and the third 0·02 g. of total alkaloids per 100 c.cm. For use the extraction is made up to a strength of either 0·016 or 0·02 g. per 100 c.cm. by the addition of distilled water.

We have investigated the biological activity of an extract of Bulgarian belladonna on the isolated heart of the frog by a fairly simple method used by Trabucchi (1935), and have found it to be nearly twice as great as that of an atropine solution of the same strength. Clinical tests on five patients who were accustomed to take large doses of atropine confirmed these biological experiments, for to obtain the same clinical effect it was only necessary to give half the dosage of Bulgarian extract in terms of atropine content.

We have also compared the belladonna root grown in England with that imported from Bulgaria. Some difference would be expected because the alkaloid content of the root of Atropa belladonna is known to vary according to such cultural conditions as the nature of the soil, climate, height above sea-level, and the time of year in which it is gathered. Analysis of various samples show that the average alkaloid content of the English root is slightly less than that of the Bulgarian. For instance, in samples analysed in March, 1937, the Bulgarian root had an alkaloid content of 0·46 per cent. and the English 0·38 per cent.

Clinically we found that in order to produce the same effect the dose of English root must be 10–20 per cent. higher than the dose of Bulgarian. Otherwise in the 45 patients we treated with English root there was no evidence that its therapeutic activity was less than the Bulgarian. The English root appeared to us to be better tolerated so that the dose had not to be adjusted so carefully. There were, however, a proportion of patients who did not do so well on the English belladonna, and in six cases we were compelled to return to the Bulgarian belladonna when we were convinced that the patients' complaints of being less active and stiffer were genuine and not due to suggestion. We have not used either the powder, the pills or the root No. 4 that Dr. Hill obtained from Raeff.

CLASSIFICATION OF PATIENTS AND PROGNOSIS

In estimating results we have divided the patients into four groups. The *first* group includes patients with extremely serious forms of parkinsonism, and who probably still have a chronic infection, which, to use Perdrau's (1925) words, the local cellular immunity has not completely overcome. They exhibit either a progressive state of parkinsonism or acute exacerbations. Their general health is poor, and they show a regular rise in temperature at night, a gradual loss of weight, and often a considerable leucocytosis. In the *second* group (severe) immunity and infection are more or less balanced, resulting in a chronic infection after a short and often obscure attack. The activity of the virus was probably very low and has in time died out. The sequelæ are severe and long-standing alterations of joints may be found. The prognosis of these patients is less hopeful, the pathological alterations in the central nervous system being deep and extensive. The *third* group (moderate) includes patients in whom immunity has definitely got the better of the infection, and they are therefore in a comparatively good state of health, though their appearance and bodily attitude are altered and they have to be helped more or less during the day. In the *fourth* group (slight) we have included patients who have not been forced to give up their daily routine, though they have not felt able to work. They complain mostly of fatigue, with a sense of general ill health and weariness. Slight physical signs of parkinsonism are almost always found.

The patients of the first group, who are more frequently met with than may be anticipated, are seriously ill and not suitable for any vigorous treatment with alkaloids, especially not for the Bulgarian treatment. To apply this treatment in high doses may cause a spread of infection. All other patients

(*Continued from previous page*)

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are suitable for the Bulgarian treatment. A definite prognosis, however, regarding the ultimate results cannot be given. The treatment though good is not infallible. We found that some of the slightly affected patients did not respond, while others who were still less affected could not tolerate the medicament and showed symptoms of intoxication with the smallest doses, reacting to alkaloids more like normal people.

TOLERATION AND DOSAGE

From a therapeutic point of view the outstanding manifestation of the remodelled organism after an attack of encephalitis is its toleration for alkaloids, which is also the most reliable differential diagnostic feature. The doses necessary to produce the optimum effect differ widely, and yet the results of the treatment depend entirely on the correct dose for every patient being found. We never begin with more than 3 c.cm., and patients who have been accustomed to take only small doses of alkaloids before begin with 0·5 or 1 c.cm. at night. The doses are increased by 1–2 c.cm. every day or every second day, and by this gradual method we have ultimately reached an intake of 80 and even 120 c.cm. per day without signs of intoxication, apart from blurred vision and a dry mouth. It is advisable to decrease the highest doses gradually, until one has found the dose which produces as good results without signs of intoxication. Our maintenance doses have not exceeded 55 c.cm. per day, the lowest being 5 c.cm. per day.

Patients who are particularly sensitive, or who have not previously received treatment with the alkaloids of the belladonna group, or have discontinued the treatment for some years, need a much lower dosage than those who are accustomed to take alkaloids continuously. The degree of tolerance in these patients is definitely lower, and treatment has to be followed up more carefully than in patients already used to taking alkaloids. In view of this varying degree of tolerance, the treatment is not one which can be lightly entrusted to the patients themselves.

ADVANTAGES

Apart from the smaller doses which are usually needed, the action of the Bulgarian treatment is much quicker than that of atropine. The change in most of our patients in two to three weeks was so obvious that, though we have become accustomed to this phenomenon, it never failed to give special pleasure. A third advantage is that the medicament can be reduced or entirely suspended for several days without any appreciable effect. If it is omitted for too long the symptoms of parkinsonism reappear, but they do so very slowly.

The more favourable results of the Bulgarian treatment may be due to three factors. (1) The natural distribution of the alkaloids in the root, which is used in toto. (2) The possible presence of buffer substances. (3) The synergism and different actions of the three alkaloids—scopolamine, hyoscyamine, atropine—which are contained in the extract. The effect of these factors is especially evident when a virtually normal state is approached. Often the maintenance dose, after a period ranging from three to twelve months, had to be reduced by half or even three-quarters, and we came to the conclusion that either the patient's toleration to the medicament decreased the more a normal state of health was approached, or the effects of the medicament accumulated in time. Panegrossi (1935) suggested that patients become accustomed to the toxicity of the drug but not to the normal state of health.

REACTIONS AND CONTRA-INDICATIONS

Severe disturbances, even with the highest doses of the medicament, are unknown to us. Nursing of all patients is easy except for those who have to be fed, dressed, and washed at the beginning of treatment. It is essential to avoid general disturbances as far as possible. I have already mentioned that patients with a chronic infection would certainly fail to obtain any benefit from treatment, and their life might well be endangered if large doses were given. Severe reactions disorganise the already weakened state of the body, and the results are not so good while even mild symptoms of intoxication are felt. For this reason much the best results are obtained with a gradual increase in dosage and with a maintenance dose that does not disturb the patient at all.

The extract is not so well tolerated on hot summer days, and therefore the doses were decreased at this time of the year. Other disturbances are mostly due to the action of the medicament on the alimentary system. Complaints of sickness, vomiting, and diarrhœa occur at times, and are in some cases inevitable. They disappear however if the medicine is left off for one or two days and is then given in smaller doses. Lately we have adopted a preparatory treatment, which was the usual routine in several wards of the Edinburgh Royal Infirmary. Every patient who is suffering from constipation or a pronounced degree of meteorism is given rectal washouts and kept for two or three days on a low diet consisting of fruit and vegetable juices. Some patients who complain of feeling sick even with small doses of the extract do well on a simple mixture containing hydrochloric acid and pepsin. Fractional test-meals of these patients have revealed a hypochlorhydria presumably due to the action of the alkaloids. With these measures adaptation to the medicament seems easier, and there are less alimentary disturbances. Later the patients are brought back to normal diet.

Some contra-indications to the treatment have already been mentioned. Patients who have a very low body-weight are unsuitable, unless they stay a comparatively long time, so that they can be nursed into better condition. It is inadvisable to give the treatment to patients who have severe damage of the myocardium or other circulatory disturbances such as atherosclerosis; hypertrophy of the prostate or disease of the kidney; active tuberculosis of the lungs; cirrhosis of the liver or marked deficiency of the liver function; glaucoma; or severe anæmias.

MENTAL DISTURBANCES

The patients who exhibited mental disturbances on admission have been divided into three groups:

(1) Those who lacked initiative, and although they took an interest in their surroundings were incapable of mental work requiring concentration and reflexion. They showed indifference and repugnance to mental or physical effort.

(2) Patients who exhibited psychomotor lethargy with akinesis, muscular rigidity, diffuse tremor, and diurnal somnolence. These were quite conscious of their personality but inactive on their own account.

(3) Those who exhibited a psychopathological condition, together with symptoms of parkinsonism.

The Bulgarian treatment was most successful in the first two classes of patients. The majority of lethargic and sometimes irritable patients changed their mental attitude surprisingly. There was in fact no real mental deterioration. After 4–5 weeks the games of draughts and dominoes for instance

changed to chess and bridge, and we could introduce putting, bowling, ball games and physical exercises to increase physical fitness and initiative. We have only treated four patients of the third group. Three reacted very favourably, one did not react. It seems then that it is quite justifiable to submit patients with mental disturbances to the Bulgarian treatment, though it has sometimes to be augmented with other drugs. Treatment of highly excitable patients should begin with very small doses, and the increase in dose should be as slow as possible. In principle these patients are as a rule included in the list of contra-indications, because Bulgarian treatment greatly increases their restlessness. We have overcome these difficulties by giving Prominal tablets as a sedative and we have also employed prominal as an adjuvant for those patients who change their mental attitude from minute to minute, and are restless and exhibitory.

RESULTS

In assessing results we have adhered to our classification into four groups according to the severity of symptoms. We treated 16 of the very seriously affected cases of the first group and though some of them have at first improved, they later relapsed or showed great variation in their condition, while others did not improve at all. In these cases a chronic infection was still active. We have therefore not included this class of patients in our statistics, because the Bulgarian treatment is not a treatment of epidemic encephalitis but only of its sequelæ. The results in the other patients were permanent. We have re-examined all patients except those who live too far away, and these have reported by letter. This was done 3–15 months after their maintenance doses were fixed and they had returned home. Our figures are based on these re-examinations or reports, so that at least three and usually six months have elapsed since the patients were discharged.

Of the 133 patients who were admitted suffering from postencephalitic parkinsonism: 5 were discharged owing to a wrong diagnosis; 5 left soon after admission, as they did not appear suitable for the treatment; 2 died of intercurrent disease; and 3 died of a recurrent attack of encephalitis. The results in the remaining 118 patients are shown in the table.

—	Severe	Moderate	Slight	Total
	Cases and per cent			
Not improved ..	5 (8·9)	2 (4·3)	2 (12·5)	9 (7·6)
Slightly „ ..	2 (3·6)	—	—	2 (1·8)
Moderately „ ..	26 (23·2)	3 (6·5)	—	29 (24·5)
Greatly „ ..	13 (46·5)	10 (21·8)	4 (25·0)	27 (22·9)
Symptomatic cure .	10 (17·8)	31 (67·4)	10 (62·5)	51 (43·2)
Fit for work ..	12 (21·4)	30 (65·0)	13 (81·25)	55 (46·6)

SUMMARY

Treatment with an extract of Bulgarian belladonna was used in 123 cases of postencephalitic parkinsonism, over a period of 1¼ years. The results were remarkably good in the majority of cases and no relapse was recorded.

The preparation has now been standardised and gave better results in its new form. Equally good results can be obtained if the English belladonna root is substituted for the Bulgarian. Only in six cases was there a difference in action.

Toxic reactions result from the administration of high doses and can be avoided by beginning with small doses and gradually increasing them until the individual's optimum is found.

The treatment is contra-indicated and useless in cases of chronic encephalitis lethargica.

I am indebted to Dr. Siewald for his help in keeping these patients under observation, in carrying out the tests, and in preparing this paper.

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Clinical and Laboratory Notes

A TEST FOR VITAMIN-C DEFICIENCY

By Max Vauthey, M.D.

An accurate estimate of vitamin-C metabolism can be obtained by determining the "basic ascorburia"—i.e., the hourly excretion of ascorbic acid when fasting. In practice this is arrived at by estimating the amount of ascorbic acid excreted in the urine during the hour after the first morning micturition and before food is taken. In the normal subject this amount is very constant, ranging from 0·92 to 1·04 mg., with an average value of 1 mg., and the degree to which it is raised by the administration of large doses of vitamin C can be used as a test for vitamin deficiency.

I have found by experiment that when the basic ascorburia reaches twice its normal value—i.e., 2 mg.—the subject may be assumed to be saturated with vitamin C, and the amount of ascorbic acid that must be given to attain this figure is a measure of the state of the subject's vitamin storage.

An intramuscular injection of 600 mg. of ascorbic acid is given each day for three consecutive days at 8 A.M. In children under ten years the dose is 300 mg. daily. The subject passes urine at 7 A.M., and the urine passed between 7 and 8 A.M. is collected for estimation of ascorbic acid. No food must be taken until after this time. In the normal subject the basic ascorburia reaches 2 mg. on the morning of the fourth day—i.e., when 1800 mg. of ascorbic acid has been given. If there was a high degree of saturation before the test began it will not take so long: if on the other hand there is a deficiency it will take longer. The significance of the results obtained appears to be as follows, the amounts of ascorbic acid shown being those required to bring the basic ascorburia up to 2 mg.

600 mg. (1 day) = very high store of vitamin C.
1200 mg. (2 days) = high „ „ „
1800 mg. (3 days) = normal „ „ „
2400 mg. (4 days) = slight deficiency of vitamin C.
3000 mg. (5 days) = moderate „ „ „
3600 mg. (6 days) = severe „ „ „
More than 6 days = true avitaminosis.

This test has certain advantages over those in general use. Thus intramuscular injection of the vitamin eliminates the errors that arise from variations in absorption when it is given by mouth, and it is I think preferable to subcutaneous or intravenous administration after which absorption and excretion may be too massive or too rapid. Further, only a single sample has to be collected and tested each

day; the tests are made on a urine that has been freshly passed, which makes for accuracy; and there is no risk of error due to early or delayed excretion of the test dose because 23 hours have elapsed in each case since the previous injection. Finally, no tests have to be made in urines with very low concentrations of vitamin C, which may be difficult to estimate accurately.

Vichy, France.

ARTERIAL EMBOLECTOMY

BY C. LAURENCE HEANLEY, F.R.C.S., M.R.C.P.
SURGICAL FIRST ASSISTANT AND SURGICAL REGISTRAR, THE LONDON HOSPITAL

IN view of the eight cases of arterial embolism reported by Griffiths (1938) the following two cases in which embolectomy was performed are of interest.

CASE-RECORDS

CASE 1, a male aged 18, had been an inpatient six years previously with acute nephritis, chronic rheumatic carditis, and mitral stenosis and incompetence. Since then he had been perfectly well until six months previously, when he had a severe cold followed by bronchitis, which had persisted ever since. Four months ago he had a small hæmoptysis of about half a pint, was treated by rest in bed, and was back at work four weeks later. Since then he had occasional pain in the chest, which kept him off work at times. Three weeks ago he felt run down and was ordered to bed by his doctor. Three days ago his doctor started him on digitalis, because his heart was fibrillating.

At 10.25 A.M. on May 9, 1937, the day of admission (6½ hours before operation), he had aching pain in the right loin and two minutes later felt his left toes go numb, and within ten minutes numbness had spread up his left leg to above the knee. He also had pain in his left popliteal space, his left foot felt cold, and he was unable to move his left leg or foot. At the same time some numbness in the right toes was noticed. The condition remained constant.

When seen at 4 P.M. his general condition was extremely bad. His radial pulse-rate was 130, the pulse being completely irregular. The apex-beat was one inch outside the mid-clavicular line. There was a systolic murmur at the mitral area, and the pulmonary second sound was accentuated. The left leg looked dead and was mottled white. No dilated veins were seen. The leg was stony cold, with stocking anæsthesia up to the level of the patella. There were no active movements of the leg, and passive movements were painful. The right leg was cold, but active movements were present. The knee-jerks were present and equal. The right ankle-jerk was present, but the left was absent. The right and left femoral arteries were felt pulsating. The artery in the left leg had a more definite and more thrusting impulse. (This was observed also in case 2.) The right popliteal artery was felt pulsating but not the left. Oscillometer readings showed an irregular large oscillation in the right thigh and calf. Oscillations were absent in the left calf and middle of the thigh, but with the band very high up some response was elicited in the left thigh.

The diagnosis was made of an embolism lodged in the bifurcation of the left common femoral artery and of a small embolism in the right anterior and/or right posterior tibial artery. The history suggested an embolism riding the aortic bifurcation for a moment or so.

Operation (C. L. H.) at 5 P.M. under local anæsthesia. The left common femoral artery was exposed, and a bulge due to embolism was seen. Crile's artery clamps were applied above and below the area of embolism. A longitudinal incision 1 cm. long was made in the blood-vessel over the clot, which bulged through the incision and was removed with forceps. The lower clamp was opened, there was almost no reflux flow, and the clamp was closed again. The upper clamp was next opened, and there was no flow; so a probe was introduced into the lumen of the artery, and the embolus was displaced forcibly by a jet of arterial blood. The artery was closed with a fine oiled silk continuous suture.

Immediate postoperative reaction.—The veins filled out and became prominent, the colour of the limb changed, and the leg became warm. Arterial pulsation was felt in the leg, and five hours later the patient could move his toes.

The leg subsequently became swollen and very painful (reactive hyperæmia) but in seven days had returned to normal. There was an amazing improvement in the general condition next day.

May 19, 1937.—There was a sudden onset of pain in both legs at 12.30 P.M., more severe in the left than in the right leg. Examination revealed anæsthesia in the left leg to half-way up the calf, and in the right to just above the ankle. Active movements were present but painful. Pavaex intermittent pressure apparatus was applied, but this was too painful to be continued.

May 20.—A sudden pain in the right leg at 2 A.M. was followed by anæsthesia and loss of function to the level of the knee. The patient was seen by a physician, who decided that surgical treatment was contra-indicated, and he was treated with morphine. He rapidly went downhill and died the next day.

Post mortem.—The heart showed rheumatic carditis and mitral stenosis. There was ante-mortem clot on the auricular surface of the mitral valve and in the left auricular appendage. The foramen ovale was closed. There was lightly adherent ante-mortem clot in the left profunda femoris and left popliteal arteries. There was no clot and no leak of blood at the line of suture. Ante-mortem clot filled the right superficial femoral and popliteal arteries.

CASE 2 was a Jewish male aged 67. The history was extremely difficult to elicit, because the patient did not speak English. Twenty-four hours before admission there was a sudden onset of pain in the right leg.

On examination he was pale but not very shocked. His blood-pressure was 160/110. His pulse was completely irregular. Auricular fibrillation was confirmed by electrocardiography. A diastolic murmur was heard at the mitral area, and some moist sounds at the bases of the lungs. There was no œdema of the lumbar region or of the ankles. The left leg was normal, pulsations of the arteries being well felt. The right leg was blue and mottled with venous congestion. The veins, after being emptied, filled up from the distal end. Both knee-jerks were present. The right ankle-jerk was absent, but the left was present. The patient could move his right leg and foot. Analgesia extended to half-way up the right leg. In the right common femoral artery pulsation was felt, but of a similar thrusting type to that of case 1. The right popliteal and posterior tibial arteries were not felt. Oscillometer readings showed normal oscillations in the left leg and thigh, but no oscillation in the right leg, although there was a suspicion of movement of the lever in the right thigh.

The diagnosis was made of an embolus lodged at the bifurcation of the right common femoral artery with fairly good anastomosis.

Operation (C. L. H.) Oct. 23, 1938, 24 hours after onset, under local anæsthesia. An embolus was removed from the right femoral artery, the technique being similar to that used in case 1, save that the incision was made just below the bulge formed by the clot. The clot adhered strongly to the blood-vessel wall, and there was a fair flow of blood from the distal end of the artery. The artery was slightly atheromatous, and there was some bleeding through the

needle holes of the suture. Since there was evidence of considerable damage to the intima, and owing to the length of the history Heparin was given, 10,000 units being administered intravenously as soon as the artery had been closed, and the patient was kept on continuous intravenous injection of heparin for 72 hours, receiving in all 55,000 units. In spite of this the coagulation-time did not rise above three minutes.

After operation the leg did not improve, and although the dorsalis pedis and posterior tibial arteries were felt pulsating the leg remained cold. On the third day intermittent venous occlusion apparatus was applied, one hour on and one hour off. Pressure on cuff was raised to about 40 cm. of water for thirty seconds approximately every two minutes. This merely hastened the line of demarcation.

Nov. 7, 1938.—The leg was amputated by Mr. W. A. Law through the lower end of the femur. The femoral artery and vein were thrombosed at the point of amputation. Next day the pulse was regular, and electrocardiography showed a normal cardiac rhythm. The patient died on Nov. 11, and no post-mortem examination was made.

CONCLUSIONS

Embolectomy is well worth while; so greatly does it improve the local prognosis in embolism of the lower limbs that it should always be performed in such cases, provided too long a time has not elapsed since the onset of the embolism. If more than ten hours have elapsed, the intima is so damaged that thrombosis occurs where the intima is lost. Heparin should prevent this (Murray and Best 1938), but in case 2 in spite of the use of heparin thrombosis occurred, possibly because heparin was not given in large enough doses or long enough. The general prognosis is poor in relation to the primary disease.

In the operation I think it is best to incise the artery wall below the clot, for removal of the clot from the proximal end is easy, the patient's blood-pressure being a help, whereas removal from the distal end is difficult. The thrusting impulse of the artery above the point of occlusion can be felt before operation and seen at operation. Possibly, in view of work done in the war 1914–18, ligature of the femoral vein might be of service when there is a long history.

I am grateful to Dr. John Parkinson and Mr. Robert Milne for permission to publish case 2. Case 1 was under the care of the late Dr. Otto Leyton.

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MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF NEUROLOGY

AT a meeting on March 16, with the president, Dr. J. G. GREENFIELD, in the chair, a short paper on

Intraventricular Tumours

was read by Mr. GEOFFREY JEFFERSON and Mr. HARVEY JACKSON, based upon their study and experience of a series of these tumours. Mr. Jefferson confined his observations to those arising in the third and lateral ventricles. He pointed out that they showed considerable divergences both pathologically and clinically. On anatomical grounds alone they were divisible into those which arose from the ependymal lining, from the choroid plexuses and velum interpositum and from certain abutting structures such as the paraphysis, pineal body and embryonic rests derived from the pituitary anlage. Again there were tumours which arose from tissues outside the ventricles and which bulged into the ventricular cavities and in respect of which the pathologist's view did not coincide with that of the surgeon. He had seen no example of the perfectly localised type of ependymoma; in his experience these tumours constituted a more malignant type which tended to spread over the ventricular floor. In describing cases of colloid cyst of the third ventricle he emphasised the importance of distinguishing between the tumour and the adjacent thalamic shadow in ventriculograms. These tumours were sometimes impossible to diagnose without the aid of ventriculography because of the absence of localising signs. They were apt to be regarded as examples of serous meningitis. He described the case of a woman, admitted to a mental hospital with delusional insanity; she was found to have papillœdema and further investigation led to the identification of a colloid cyst, and of an unusual example of astrocytoma of of the septum pellucidum in which the tumour caused unilateral hydrocephalus by blocking one of the foramina of Monro. In another case, in a young child, epileptiform attacks began after vaccination and were succeeded by vomiting and hemiplegia. On radiographic examination a patch of calcification was apparent, but on the wrong side for the hemiplegia. Ventriculography disclosed a tumour bulging into the third ventricle which eventually was proved at autopsy to be epiloia. Another rare and interesting case was demonstrated in which a meningioma, arising from the tela choroidea in the third ventricle, extended on both sides, into the adjacent parts of the lateral ventricles. A difficult problem was presented by a woman with amenorrhœa, central scotoma and bilateral papillœdema in whom radiograms showed enlargement of the sella turcica. Although a Rathke's pouch tumour was suspected ventriculography demonstrated a mass bulging from the septum pellucidum into both lateral ventricles. By splitting the corpus callosum the tumour was exposed and proved to be a gliomatous cyst. Since operation the patient had maintained good health.

Mr. Jackson also emphasised the importance of ventriculography as a diagnostic test in the presence of generalised hydrocephalus without localising signs. In illustration of this he described four cases in some detail. The first was in a boy of 18 years with a long history of pulmonary tuberculosis, who presented signs and symptoms suggestive of a cerebellar lesion, probably a tuberculoma. In view of the patient's poor general condition it was thought proper to explore the posterior fossa without a preliminary ventriculogram. The exploration was, however, negative, and at necropsy a pedunculated tumour was found attached to the pillars of the fornix and blocking the foramina of Monro. Ventriculography would have displayed the lesion and have determined the correct procedure. In another case a woman had given a history of epileptiform attacks without localising features, interrupted by a remission of four years' duration. Three years before entering hospital her vision had deteriorated and nine months before admission she had been completely blind for one week. There had been partial recovery from this and on examination there was a papillœdema of

low grade and a lower quadrantic defect upon the right. She had suffered from occipital and sub-occipital headaches and from attacks of numbness in the left side of the body. Except for writing she appeared to be left-handed. There was no aphasia; the right plantar reflex was possibly extensor. Radiographic examination showed depression and displacement to the right of the pineal body, and by ventriculography a filling defect of the left ventricle and displacement to the right of the ventricular system were displayed. An intraventricular meningioma was removed by operation from the hinder part of the left lateral ventricle. Mr. Jackson described two other cases and emphasised the significance of an unexplained weakness of the lower limbs. He distinguished between the true intraventricular tumours and those which infiltrated the ventricles from without. The former were clinically malignant but pathologically benign.

Dr. GEORGE RIDDOCH spoke of the great surgical interest and importance of the intraventricular tumours. He criticised the clinical separation of those tumours which lay entirely within the ventricular system from those—for example, tumours arising from remnants of the pituitary anlage—which invaded the system from without. There was a similarity in the clinical picture in that hydrocephalus was an outstanding feature of both kinds. He also noted that since local signs were likely to be absent, ventriculography was of importance in establishing the diagnosis. Amongst points of diagnostic significance he stressed the occurrence of intermittent hydrocephalic attacks in association with tumours of the posterior fossa as well as with intraventricular tumours. Mental deterioration was often an important feature in chronic progressive hydrocephalus, and such deterioration, in the absence of headache, was particularly significant of tumours of the third ventricle. He confirmed Mr. Harvey Jackson's view that sudden attacks of weakness of the lower limbs also pointed to this diagnosis, and might indeed be the first symptom. On the whole hypothalamic symptoms were rare. Lethargy and hypersomnia and adiposity should only be interpreted as of hypothalamic origin in the absence of raised intracranial pressure. The oculomotor symptoms sometimes observed during hydrocephalic attacks might result from pressure upon the quadrigeminal plate by the distended lateral ventricles.

Dr. J. G. GREENFIELD said that unusual histological types of tumour—e.g., ganglioneuroma and malignant ependymoma—were often encountered amongst the intraventricular growths.

Deep X-Ray Therapy for Pituitary Tumours

Dr. ALEXANDER ORLEY, speaking on the treatment of cerebral tumours by deep X-ray therapy, with special reference to pituitary tumours, said that most of the gliomas were radiosensitive, but the degree of radiosensitivity varied with the histological type in the descending order: medulloblastoma, ependymoma, astrocytoma, and glioblastoma multiforme. The oligodendroglioma was radioresistant. Of the blood-vessel tumours the hæmangioblastomas should be treated by operation and postoperative irradiation while the malformations should receive irradiation alone. The meningiomas were radioresistant tumours. As to pituitary adenomas their evolution could be divided into three stages: (*a*) endocrine, (*b*) visual, and (*c*) tumoral. The endocrine phase should be treated by radiation, the tumoral phase by surgery, and the treatment of the visual phase should be determined by the circumstances. Patients undergoing radiotherapy should be closely watched and surgical intervention undertaken when required. The best results followed combined treatment.

Dr. C. P. SYMONDS thought that Dr. Orley had reached some important conclusions without sufficient controls. It was necessary to compare the clinical evolution of cases that received no treatment with that of cases treated by deep irradiation. The spontaneous fluctuations that occurred in cases without treatment were often remarkable: thus vision might be suddenly lost and later restored. We did not know the underlying causes of such fluctuations; they might be due to the formation and resorption of cysts. In the irradiation of gliomas we had perhaps better opportunities for criticism and evaluation of the results. The results obtained in medulloblastomas had been of the greatest value, but he had been unfavourably impressed by the results in other types of glioma.

Dr. J. PURDON MARTIN thought it unfortunate that so few figures had been collected for the results of irradiation of these tumours in this country. Dr. Orley's figures had been derived largely from abroad. In his experience this form of therapy had been successful in treating pituitary adenomata of mixed type, and it was entitled to more extensive trials.

Mr. JEFFERSON had found that the cell type underwent little change in irradiation and we were therefore profoundly ignorant of the reasons why some cases responded well to this kind of treatment. He disagreed with Dr. Orley's suggestion that irradiation should be directed to pituitary tumours in what he had called the endocrine phase, relegating the tumoral phase to the surgeon. In his view the patient who reached the tumoral phase usually died after surgical intervention; the best chance at this stage therefore lay in irradiation. As a postoperative line of treatment he supported irradiation wholeheartedly.

SECTION OF THERAPEUTICS AND PHARMACOLOGY

AT a meeting on March 14, with the president, Dr. J. W. TREVAN, in the chair, a discussion was held on

Vitamin E

Prof. J. C. DRUMMOND summarised the present position of knowledge about the physiology of this vitamin. The discoverers of the vitamin had shown that it caused a failure of pregnancy in the female rat and degeneration of the spermatozoa in the testicle of the male rat. They had thought the effect on gestation was due to a failure of placental circulation. Recent work suggested a close relationship between vitamin E and the function of the anterior pituitary. Vitamin E did not seem to exert any direct gonadotropic effect but in vitamin-E deficiency the anterior pituitary, particularly in male animals, had an appreciably increased gonadotropic action. The general picture of vitamin-E deficiency suggested a hormone imbalance and this had tentatively been attributed to a dominant action of an œstrin-like factor. Such a hypothesis was in keeping with some of the facts but was not supported by other observations. In particular the testicular degeneration characteristic of vitamin-E deficiency differed significantly from that produced by injections of œstrone. So far, said Prof. Drummond, no success had been obtained in any attempt to prevent the typical castration-resorption in does or to cure the typical degeneration of spermatogenic tissue in males by the administration of pituitary extracts or

hormone preparations. He concluded that no simple relationship existed between the anterior pituitary and vitamin E.

Mr. A. L. BACHARACH discussed the difficulties involved in the biological assay of vitamin E. He emphasised that though vitamin E seemed to be essential for normal pregnancy in the rat, deprivation of the vitamin was without effect on gestation in the goat. It was not safe therefore to argue directly from one species to another as far as vitamin-E needs were concerned. He had found that 100 per cent. gestation-resorption occurred in rats fed exclusively from the time of weaning on an E-deficient diet. If such animals were given vitamin E in graded doses during pregnancy the percentage of live litters seemed to be a function of the dose employed. A rat which owing to deficiency of the vitamin had had one resorption of pregnancy showed greater resistance to the implantation of a further ovum than its virgin sisters and its response to vitamin-E therapy was also reduced. In testicular degeneration, mildly damaged testes were only repaired when extremely big doses of vitamin E were given, while severely damaged testes did not respond at all.

Miss M. M. O. BARRIE stated that a partial lack of vitamin E was probably worse than a complete lack, since it resulted in pathological pregnancies while a complete lack led only to a failed pregnancy. Partial deficiency might have three results: (1) a toxæmia of pregnancy, (2) prolonged gestation, (3) production of E-deficient milk. Miss Barrie said that rats fed on an E-deficient diet and then given vitamin E after mating developed muscular dystrophy and bleeding from nose and rectum. At autopsy gross lesions were found in both liver and kidney, associated with pigmentation of the uterus. When the deficiency was mild the rats might deliver a normal litter, but about 18 days after birth the young began to show signs of E-deficiency. This deficiency she attributed to lack of the vitamin in the mothers' milk, because if the young were raised by a normal foster-mother they remained well, while the litter of a normal mother suckled by an E-deficient rat developed signs of E-deficiency. In Miss Barrie's view the close similarity in appearance of the hypophysectomised rat and the E-deficient rat suggested a close relationship between the vitamin and the anterior lobe of the pituitary. She hoped that vitamin-E therapy might prove to be of clinical value in women subject to habitual abortion and in those with toxæmia of pregnancy or deficient lactation.

Prof. F. J. BROWNE said that published reports suggested that treatment by vitamin E of habitual abortion in women resulted in the birth of a living child at term in 75 per cent. of cases. He himself was unconvinced by such results, since equally satisfactory findings were reported from the use of extremely varied therapy—for instance, progesterone, vitamin C, weekly injections of small amounts of serum from pregnant women, and cold baths. He described 18 cases of habitual abortion which had been treated at University College Hospital; 8 cases were given progestin, 3 vitamin E and 7 good advice, 2 of the latter being admitted to hospital. The 7 control cases all had living healthy children at term. Prof. Browne urged the need of greater caution in interpreting the results of vitamin-E therapy in women in the absence of adequate controls.

Mr. F. BERGEL, Ph.D., emphasised the importance of using stable preparations of vitamin E for clinical trial.

Prof DRUMMOND, in reply, said that Prof. Browne's findings suggested that in humans the process of normal pregnancy, like that in the goat and unlike that in the rat, may not be dependent upon vitamin E. He reminded the meeting that the diet of the poorer people in this country is extremely deficient in vitamin E.

HUNTERIAN SOCIETY

AT a meeting of this society on March 20, with Mr. A. C. MCALLISTER, the president, in the chair, a discussion on

Misleading Leading Symptoms

was opened by Lord HORDER. He said that the predominant misleading leading symptom was pain. A symptom might be local but the disease which produced it general. A local symptom of typhoid might be an intense neuralgia relating to some division of the fifth nerve and suggesting an acute sinusitis. In poliomyelitis retention of urine and pain in the back might be the presenting symptoms. A symptom that had several times threatened to distract his attention from the true position was the "cardiac shock" which replaced the rigor in certain acute diseases. Pneumonia, especially in elderly people, might start without shivering, and the physician might not think of taking the temperature, or the temperature might be equivocal. The picture was like that of a cardiac attack, with cyanosis, a poor pulse, and the features of an acute ventricular insufficiency. Conversely, a local disease process might produce general disease symptoms. In an adult a small patch of erysipelas or of streptococcal dermatitis, or an early cellulitis with slight lymphangitis, might be present in a patient who was brought to the physician for headache, delirium and high fever with a request to perform lumbar puncture. The symptoms were not due to meningitis but to the other focus of infection. The practitioner was sometimes misled by severe anginal or lower sternal pain in gall-bladder disease. The patient might, however, be suffering from both diseases. Anginal symptoms might indicate diaphragmatic pleurisy. Some patients with a duodenal ulcer presented all the classical symptoms and the diagnosis was confirmed by radiology or surgery, although the pain and tenderness were left-sided.

Functional disorders, Lord Horder went on, sometimes simulated organic trouble. Migraine with hemianopia, aphasia, anæsthesia, paresis, and ophthalmoplegia might occur in a patient suspected of organic disease. In a patient with hyperpiesis and a certain amount of arteriosclerosis who was not yet old enough to have emerged from the migrainous state the symptoms were very misleading. Many cases of strabismus and some of diplopia were merely due to excessive fatigue, although these symptoms might linger for some time. A patient might have very intense headache with slight mental confusion, slight pyrexia, and a stiffness of the neck suggesting mild meningitis, after a long and exacting motor drive under bad conditions. Such patients sometimes had a suspicion of disseminated sclerosis attached to them for years on that evidence alone. The angioneurotic patient might be suspected of organic disease, and it was the fashion now to look for an underlying inflammatory trouble. Epilepsy might be missed in a patient who complained of flatulence and attributed "nerve storms" to it: in other words, the aura of epilepsy was a misleading symptom. Very many anginoid patients said that

their pain disappeared when they got rid of wind; this association was synchronous rather than causal. The crises of tabes were apt to be misleading. Some hæmaturias did not connote stone, neoplasm or a renal lesion. The patient with chronic interstitial nephritis who was getting on in years and had been taking hexamine for rather longer than was advisable might sometimes show hæmaturia, and it was not always realised that hæmaturia was quite common in acute pyelitis. Anuria when the patient was vomiting or suffering from diarrhœa might be misleading, and so might the pain which preceded the rash in herpes. Lord Horder still saw, he said, the shiny red foot or hand of acute gout with incisions in it, which did not heal well even on the Prontosil which some physicians tried. Epileptiform attacks might occur in hard drinkers, and true epilepsy might begin late in life without syphilis. The enlargement or ptosis of an organ, such as the spleen or liver, might cause puzzling symptoms.

Mr. W. H. OGILVIE declared that misleading symptoms could only be misleading to one who was able to be misled. "Leading" conveyed the idea of motion, and surgeons were more likely to be misled than physicians because they were more likely to do something. A policy of masterly inactivity was an absolute safeguard against "misduction." Pain could not be analysed and was capable of limitless misinterpretation by the patient and the practitioner. Its real severity might bear little relation to the patient's account of it, and depended on the age, sex, courage and general background of the patient. Each physician must construct his own scale of values from his personal experience. The most severe pain was that of perforated duodenal ulcer, closely followed by that of coronary disease, which might mimic a surgical emergency. Next came gall-stone colic, slightly behind it renal colic, and then acute pancreatitis; much later came the pain of appendicitis and intestinal colic. A good malingerer could describe and mimic the pain of perforation, and spurious or imaginary pains were more likely to mislead when they were associated with a real organic lesion.

The practitioner must decide not only what disease the patient had but what he was suffering from. An expensive medical education rather predisposed to mistakes, and clinical experience was the only safeguard. The specialist would detect the slightest abnormality in the organ or system of his own particular study, but could swallow a whole camel of coincident general disturbances. The vomiting, distension and constipation typical of colonic carcinoma were often seen with uræmia. The vomiting of large quantities of blood, usually an indication of organic disease, was frequently practised by hysterics and malingerers. He had been led astray by pigmentation that was not due to residual jaundice but to Asiatic extraction. Symptoms should not lead the physician, but came to him to be put in their proper place. When they had been marshalled and assessed the physician would often find that the most noisy symptom was not necessarily the leader. The medical profession would be very foolish to abandon the system of clinical training which prevailed in this country and which had been founded by Sydenham and Boerhaave. Mr. Ogilvie said he had suffered throughout his life from a complete ignorance of psychology. Students should be taught the working of the normal mind as part of their ordinary physiological training, and should later be given enough psychological instruction to show them how the normal mind reacted to the stress of circumstance and modified the signs and symptoms of disease.

DISCUSSION

Dr. F. M. R. WALSHE said that there were no misleading symptoms, only symptoms that the doctor failed to interpret. One reason for such failure might be the natural tendency to accept a patient's description as bearing some relation to reality. The "headache" and "giddiness" most often described to the neurologist should be taken to mean nothing at all until the exact meaning that the patient attached to those words had been elicited. Giddiness might mean unsteadiness due to tabes or rotary vertigo from labyrinthine disease, or might merely be a figure of speech in a psychoneurotic. Out of ten neurological patients complaining of headache, there might not be two with the same physical basis for it. Interpretation could only be reliably made after observation of the entire constellation of symptoms. If clinical medicine could only be learned at the bedside, he asked, how could psychology, a much more complex subject, be taught to an adolescent medical student out of books? The understanding of the minds of one's fellow-men could only be gained in the battle of life. To add more precise psychological study to the medical curriculum would be a completely futile last straw on the back of the wretched camel.

Dr. GEORGE RIDDOCH spoke of the difficulty of estimating the patient's normality, capabilities and intelligence in a comparatively brief interview. The physician might also be misled by statements of relatives and friends. Especially dangerous were symptoms on the borderline between physical and psychological interpretation. In a case of head injury symptoms which appeared to be psychoneurotic—e.g., pain and discomfort in the head—were sometimes laid aside in that category and proved later to have an organic basis. Defects of memory and difficulty in concentration might be the result of disturbances which would lead in time to permanent disability. Pain might be absent in a neurological condition where it should be present, such as cerebral tumour; and elation or depression with delusions might be absent in an early general paralytic. General paralysis might develop insidiously under the appearance of neurasthenia.

Mr. L. E. C. NORBURY spoke of a patient whose baffling symptoms of pain had been produced by a series of misguided operations. Some patients could produce symptoms at will—e.g., those of dislocated ankle—and capitalised them round the hospitals.

Mr. C. P. G. WAKELEY gave a warning against failure to put to the patient questions which appeared irrelevant. A diagnosis was sometimes missed because of a negative report from the radiologist. Diagnosis tended to be made in a department rather than on clinical evidence, and there was today a lack of clinical observation.

Mr. W. D. DOHERTY complained of the tendency to send patients to a specialist because the leading symptom seemed to fall within his specialty, when the real condition was not one for that specialist at all. Many infant boys were circumcised because they appeared to cry whenever they passed water. In his opinion these children often only passed water as a mechanical result of screaming due to some other cause of pain.

Dr. F. HOWARD HUMPHRIS told how he had once mistaken a diabetic coma for alcoholic stupor, and deduced from the experience the precept always to test the urine.

Dr. ALASTAIR MCGREGOR mentioned a case in which a tapeworm had caused glycosuria on which diabetes had been diagnosed.

Mr. H. L. ATTWATER recalled the case of a woman in whom a subacute congestion of the bladder leading to the single symptom of frequency had been due to a local smouldering inflammation of the right fallopian tube.

Mr. A. E. MORTIMER WOOLF thought that the semi-fraudulent patient was more baffling than the malingerer, and instanced a girl who had repeatedly appeared with pins in the intestinal tract. The most misleading symptoms were common symptoms that had unusual bearing. Hæmaturia might be caused in children by eating peardrops, which were flavoured by certain acetanilides.

Dr. G. L. ATTWATER spoke of a mysterious pyrexia in a nurse whose integrity was undoubted; she had a bowed shoulder and a hunched back and complained of pain on the right side, but there was no tenderness or tumour and the urine was normal.

Dr. F. A. RICHARDS discussed the vagaries of amenorrhœa, and mentioned that pregnancy might be overlooked in an obese patient.

Mr. A. DICKSON WRIGHT drew attention to the danger of regarding as fraudulent or neurotic patients who really had an organic disease, and gave as an example a case of malignant disease dismissed as pseudocyesis. Lesions in the feet or hands of patients suffering from arterial disease were sometimes mistaken for whitlows and incised.

Dr. W. H. F. OXLEY, proposing a vote of thanks to the openers, said that more careful search for physical signs would prevent some mistakes.—Mr. D. C. NORRIS, seconding the motion, stressed the value of taking an all-round view of patients, and gave an example of confusion between symptoms of appendicitis and of pneumonia.

REVIEWS AND NOTICES OF BOOKS

The Social Function of Science

By J. D. BERNAL, F.R.S., professor of physics in the University of London, at Birkbeck College, London: George Routledge and Sons. 1939. Pp. 482. 12*s.* 6*d.*

IN this fully documented and closely written treatise, supplemented with notes and appendices, Prof. Bernal surveys science in the past, present and future. The frustrated scientist speaks his mind, and to those who complacently think and speak of scientific progress as one of the outstanding merits of the age his representations will be something of a shock. In his view the teaching of science at school is deplorable: "physics and chemistry, as required for university entrance examinations or school certificate, has been worked into one of the most repulsive routines imaginable." Their curricula contain nothing concerning twentieth-century discoveries. At the university things are hardly better and the lecture system in particular is condemned. The conditions and character of research work done in university, government and industrial departments is examined at length and its parsimonious backing, lack of coördination and often desultory character are frankly exposed. It certainly reflects poorly on the present state of our civilisation that the annual grant to the Medical Research Council is only £195,000 (1938) in comparison with £204,000 for the Chemical Warfare (Defence) Department. Nor is it encouraging to find that we lag behind other and poorer countries in our expenditure on research. Bernal concludes that relative to its wealth and importance in world affairs, England spends very little on science and makes less of its potential scientists than do any of the other great powers. This and other equally formidable charges are supported by facts and figures.

In view of our fine tradition and opportunities the time has clearly come when we should review the situation and decide upon our future policy. And here there is little doubt that those who like to keep science and politics in watertight compartments will jib at many of the suggested remedies. Fundamentally the reform must come through improved education combined with greater support from the state. Such education should cater also for the man in the street who, with better and fuller newspaper reports and popular expositions of scientific matters, perhaps including televised experiments, would take a greater interest in science and appreciate more fully and intelligently the part it plays in his daily life. In short a real understanding of science should become a part of the common life of our times.

Bernal makes many practical suggestions for the more effective running of laboratories and the recruiting and training of workers in all lines of research, and he emphasises the desirability of forming a greater number of institutes where specified lines of research may be pursued by teams of suitably qualified workers. The function of scientific periodicals is also examined and the view expressed that we are within measurable distance of suffocation by the volume of matter published—an event only to be avoided by abolition of nearly all existing journals and rationalisation of scientific intercommunication. The pursuit of science along Bernal's lines might well create a world both brave and new, and his utopia has an appearance of practicability as well as an absence of priggishness. Any prospect of immediate achievement is however seriously handicapped by the present epidemic of nationalism which, in more ways than one, threatens a severe setback to scientific progress.

This review mentions only a few of many interesting sections of this book, and all who have the welfare of civilisation at heart are advised to give it their serious and unprejudiced consideration.

Ker's Manual of Fevers

(4th ed.) Revised by FRANK L. KER, M.B. Edin., senior assistant and deputy medical superintendent, Little Bromwich Hospital, Birmingham. London: Humphrey Milford, Oxford University Press. 1939. Pp. 354. 12*s.* 6*d.*

THE preparation of the fourth edition of the late Claude Ker's Manual of Fevers has been undertaken by his son, Dr. Frank L. Ker. Eleven years have passed since the last edition, edited by Dr. Claude Rundle, appeared and Dr. Ker says that while the greater part of the text remains unaltered advances in the bacteriology and treatment of the infectious diseases have necessitated considerable revisions and additions to these sections. Claude Ker's clinical descriptions of the common fevers are among the best we know and it is well that in the main they have been left untouched. Unfortunately however the reviser, in a laudable attempt to preserve as much as possible of his distinguished father's work, has retained a good deal that is obsolete and has omitted much new work. The Paschen bodies, now recognised as the virus of smallpox and vaccinia, and the analogous elementary bodies to be found in the vesicles of chickenpox, are not mentioned. The arguments

against the connexion between chickenpox and herpes zoster are enumerated, but nothing is said of the almost conclusive evidence that has accumulated in favour of an identical virus. Vaccination by scarification, here described, has been officially deprecated for ten years; indeed the whole section on vaccination requires rewriting. There is nothing about postvaccinal encephalitis or, for that matter, about measles encephalitis. Few will agree with the advice to regard 24,000 units of antitoxin as the maximum single dose to be reserved for the serious case of diphtheria; nor is the aggregation of unitage by daily doses in accord with most modern teaching. The subcutaneous route of injection has long been discarded by fever-hospital clinicians. We find no reference to accessory glucose therapy, which is generally employed in fever hospitals for the toxic case of diphtheria. Weekly injections of diphtheria prophylactics are not now recommended; wider spacing of the doses is almost universal. The Moloney test for sensitivity to toxoid might have been included with advantage. If we appear to emphasise the defects of the section on diphtheria it is because we share the anxiety felt by all those concerned with public health in this country that prophylactic measures against this preventable disease should be encouraged and that meanwhile the knowledge gained about its treatment should be widely disseminated.

In spite of these criticisms of points of detail, Ker's Manual of Fevers maintains its position as one of the best of the smaller books for students. The format and type are pleasing. The text is illustrated by clear charts, but the photographic reproductions of the exanthemata, as is usually the case, are only moderately instructive. We wish the book, under its new editor, the popularity it has always enjoyed.

Clinical Laboratory Methods and Diagnosis

(2nd ed.) By R. B. H. GRADWOHL, M.D., director of the Gradwohl Laboratories, St. Louis. London: Henry Kimpton. 1938. Pp. 1607. 50*s*.

THIS big volume covers every examination likely to be required in a laboratory or a clinic, whether it is a matter of bacteriology, serology, hæmatology, or biochemistry. On the whole the work is well done, the descriptions being clear and accurate, but obviously such a wide ground could not be covered by a single person and the author must have drawn on the experience of others. This is apparent in the text, which in many places has a curious impersonal tone. Thus in the section on the stomach the description of the test-meals is accurate but reads rather like an extract from a railway timetable. Two different ghosts must have written this section without consulting each other, for on p. 582 ghost No. 1 writes that in carcinoma of the stomach there is no free hydrochloric acid at any time, whereas on the next page ghost No. 2 remarks that in the same condition free hydrochloric acid is present in amounts varying from low to abnormally high values in practically 50 per cent. of cases. Such things tend to shake the confidence of the critical reader. It may be that this omnibus type of volume is less satisfactory than a series of books written by men who are working at the various benches.

St. Thomas's Hospital Reports

(Second series, vol. 3.) Edited by Prof. O. L. V. S. DE WESSELOW and C. MAX PAGE, F.R.C.S. London: St. Thomas's Hospital. 1938. Pp. 240. 10*s*.

SINCE the St. Thomas's Hospital Reports were reconstructed three years ago, they have contained a large number of original papers, many of considerable value. The present volume maintains and even improves upon the high standard previously set. The range of the contents is very wide—from psychiatry to ophthalmology, from physiology to venereal diseases—but the bulk of the papers deal with problems of internal medicine. Prof. de Wesselow and W. A. R. Thomson find that in Addison's disease a fall in serum sodium has a closer correlation with symptoms than a rise in serum potassium. They also record œdema following overdosage with sodium chloride, and they have obtained good results from a low-potassium diet combined with sodium chloride and citrate. W. I. Card reviews fully the question of gastritis from the functional, histological, clinical and gastroscopical aspects; he makes a good case for the inclusion of gastritis among our common medical diagnoses. Buzzard, Richardson and Turner review the progress of 116 cases of ulcerative colitis. They find psychological make-up an important factor in prognosis. Simple medical treatment appears to give the best results, but when it fails, a transverse colostomy is often of great value. D. P. King provides evidence that the Gordon test for lymphadenoma depends not on a virus but on the number of eosinophil cells in the inoculated material. Leucocyte creams rich in eosinophils from non-lymphadenomatous sources give uniformly positive results. Bourdillon, Cargill, Cosh and Miles confirm the common occurrence of a mild normocytic anæmia in pregnancy. Jones and Taylor find vitamin preparations of no curative or prophylactic value in acute rheumatism. W. H. de B. Hubert reviews the scope of the new psychiatric children's clinic at St. Thomas's, and stresses the value of juvenile treatment and prophylaxis, in contradistinction to the bad outlook in much adult neurotic material.

On the surgical side, the outstanding paper is a review by N. R. Barrett of putrid lung abscess. The importance of recent anatomical work, especially on the bronchopulmonary segments, is emphasised. Unfortunately, although nearly forty authors are mentioned in the text of this article, there is no bibliography. The bibliographies of most of the other articles are excellent. R. H. O. B. Robinson writes on ureteric calculus, G. Perkins on ununited fractures, P. G. Doyne on lacrimal obstruction, and H. Ridley on treatment of the detached retina. These four articles are honest textbook stuff, of great value to those who need to refresh their memories. Fergusson and Durbin survey the results of the treatment of 146 cases of fractured patella; their conclusions differ little from previous findings. Among other articles may be mentioned the late Prof. Dudgeon's complete story of an early X-ray carcinoma, Prof. B. A. McSwiney's account of afferent fibres from the abdominal viscera, and J. Wyatt's discussion of the hæmolytic streptococcus in relation to puerperal sepsis. The volume closes with 22 abstracts and a complete list of recent papers by St. Thomas's men. The paper, printing and binding are excellent.

At times one wonders precisely for whom hospital reports are intended. Their breadth of scope and limited circulation make them unsuitable for rigid specialist studies. Yet the present volume of the St. Thomas's reports contains some excellent original work. Its authors were prepared to lose a little glory in order to tell the world what St. Thomas's is doing. Reports are in fact an index of the quality and quantity of work and thought going on in their parent hospital. In addition, they should form an intellectual link between the hospital and its scattered flock. Judged by both these criteria, volume 3 of the new St. Thomas's Hospital Reports must be regarded as a success.

THE LANCET

LONDON: SATURDAY, MARCH 25, 1939

STATE AID FOR CANCER RESEARCH

THE peers taking part in the debate on the second reading of the Cancer Bill in the House of Lords, which centred on an amendment moved by Lord BALFOUR OF BURLEIGH regretting that no provision was made for increased research, showed an encouraging appreciation of separate issues—the need for more general application of current knowledge and the need for adding to that knowledge. The bill is concerned entirely with the first of these, except in so far as clinical records and their statistical analysis will provide guidance in the choice between methods of treatment. The chief remediable defect in our present system, or lack of system, of combating cancer, in the light of existing knowledge, is delay—in seeking diagnosis, in making diagnosis and in securing prompt treatment. It is hoped to eliminate or at least to reduce this dangerous waste of time at each stage by the establishment of over 300 local consultation centres and some dozen new treatment centres in areas now without them. About 1000 additional beds will be needed and these are to be attached to existing hospitals in order to avoid the stigma which might adhere to special "cancer" clinics.

The modern unit for treating cancer consists of a team of skilled workers who collaborate in the study of each case and decide which of the available methods—surgery, X rays and radium—or what combination of methods should be used. As Lord DAWSON pointed out, there is no difficulty in finding good surgeons but there is a dearth of skilled radiotherapists, and the number of men seeking training and experience is much too small to meet the future demand. The risk of taking up this specialised work is that radiotherapy may be replaced by some other form of treatment for malignant disease; but there is probably enough evidence that it is in an actively developing rather than a regressing phase to overcome this objection. A much more potent deterrent is the lack of good prospects now; when the posts advertised offer adequate remuneration and a hospital status equal to that of other members of the team there will be no shortage of candidates. The position of the radiotherapist must be assured if he is to exert a proper influence on the decisions made; surgeons have long been used to undivided responsibility for the treatment of cancer and are not always easily persuaded to change their practice in deference to his views. The ideal team should consist, as Lord DONOUGHMORE said in describing the organisation already established in some centres, of "equals all equally concerned."

None of the clauses of the bill were criticised and there was a general desire that it should speedily become law. But while all the speakers loyally entered into the spirit of optimism that the bill is designed to engender, and emphasised successes rather than failures in treatment, there was obvious concern lest a too complacent attitude had been adopted. Lord BALFOUR OF BURLEIGH made an eloquent plea for state subsidy of research—"an investment which may result in great economy"—and this was warmly supported by every speaker who followed him. The balance between knowledge and ignorance of cancer is still so overwhelmingly on the debit side that the expenditure of some £700,000 a year (more than three times the total amount of the annual grant to the Medical Research Council) on diagnosis and treatment without any corresponding allocation for research could hardly escape criticism. Broadly speaking, we do not know enough about the causation of cancer to be able to prevent it; and if more than half the "early" cases of cancer in accessible sites presenting themselves at a centre are alive 5 years afterwards we regard this as a creditable achievement. Lord BALFOUR OF BURLEIGH did not detail the type of research unit that the Medical Research Council, over which he presides, have in mind, but he estimated the cost at some thing like £30,000 a year for 10 or 15 years; and he hinted that besides fundamental research into causation the council might undertake the study of new methods of treatment, including neutrons. The gist of the message conveyed by the debate was that while applying what we know we must redouble attempts to learn more, and that the state should support both these efforts. In the end Lord STANHOPE, while unable to commit the Government, said how greatly he had been impressed by the support which the amendment had received from every quarter of the House, and undertook to convey to the Chancellor of the Exchequer the desire that further provision for research should be made. In view of this undertaking the amendment was withdrawn, and the bill was read a second time.

The tone and outcome of this debate, which was maintained throughout at a high level, will bring satisfaction to those interested in medical and indeed in all branches of applied science. It indicates a surprisingly wide acceptance by our legislators of the view, held by all scientific workers, that success in administrative action directed towards problems of health is not primarily determined by the size of the organisation or of the money available, but by greater knowledge of the disease to be combated and of the weapons in the service of the doctors.

M. & B. 693 IN THE U.S.A.

EVERYONE concerned with the treatment of pneumonia has awaited with interest the impact of M. & B. 693 on therapeutic practice in the United States. Pneumonia has for many years been investigated more thoroughly and on a larger scale in that country than anywhere else, and until last year almost every advance in its study and treatment has been due to the efforts

of American workers. Their most notable achievement has been the progressive perfection of serum treatment, and the sudden advent of a chemotherapeutic alternative creates a situation for which there is certainly no exact parallel in the annals of specific therapy.

The first records of American opinion and experience of this drug are now appearing in print, and they contrast strangely with what has been written about it in this country. We referred on March 4 to E. K. MARSHALL's report on its absorption and toxicity, and his scathing remarks on the inadequacy of its pharmacological study. An even more downright protest in more general terms has now appeared under the formidable names of BULLOWA, PLUMMER and MAXWELL FINLAND.[1] They think that the clinical reports hitherto published are "grossly inadequate for any evaluation," they deplore the indiscriminate use of the drug—which is apparently receiving much publicity in the lay press and by radio—and they conclude by urging that serum treatment should be used as before, "until those in a position to undertake carefully controlled observations have had an opportunity to ascertain the value of this drug and its limitations, and are prepared to present properly documented results in significant numbers of cases." This is the attitude taken by Dr. THOMAS ANDERSON in our correspondence columns on Feb. 25, and if anything in the editorial article he then criticised had belittled the need for the more intensive and critical study which is now in progress in the U.S.A., we should have to admit that his protest was justified.

The same note of reserve and caution, which many workers here will think unnecessarily discouraging, pervades a report of the council on pharmacy and chemistry of the American Medical Association,[2] which has now adopted the name "sulfapyridine" as a non-proprietary name for the remedy. (It will be remembered that this council proposed the name "sulphanilamide" for *p*-aminobenzenesulphonamide and that this country at once accepted it; but "sulfapyridine" does not seem quite so happily descriptive a choice, nor is there a need for it such as was created by the enormous diversity of proprietary names invented for sulphanilamide.) The report itself is written by PERRIN H. LONG and he records observations of his own as well as adjudicating on those of others. He has confirmed the efficacy of the drug in experimental streptococcal, pneumococcal, staphylococcal and meningococcal infections in mice, and adds that it is also effective against Friedländer's bacillus and *Clostridium welchii*. He refers to MARSHALL's work on its incomplete absorption, and he has himself noted that it is "irregularly absorbed in man and animals and in comparison with sulfanilamide is also more slowly and definitely less well absorbed." In discussing the treatment of pneumonia, the only conclusion reached is that until further evidence has been obtained, the use of serum should not be abandoned. One minor but interesting point is that the alleged immunity to reinfection of mice infected with pneumococci and successfully treated with the drug is denied. This finding is perhaps consonant with the now familiar clinical observation that, unless the treatment is continued for a week, pneumonia is apt to recur. From these and other considerations it is concluded that the general use of the drug is not yet warranted, and that it should only be employed by those in a position critically to evaluate it.

As a set-off to these somewhat severe pronouncements, the same journal contains two clinical reports which, though guarded, are generally favourable. BARNETT and his colleagues[3] describe the treatment of 14 cases of pneumonia and 9 of miscellaneous conditions, all in children; they made numerous estimations of the concentration of the drug in the blood, and found that this could be maintained by giving a 2 per cent. solution of its sodium salt per rectum, a proceeding which may obviate the nausea and vomiting often produced. FLIPPIN and his associates[4] treated 100 cases of pneumonia with only 4 deaths, 3 of which were in type III infections; of 8 patients shown to have bacteræmia only 1 died. They also estimated the concentration of the drug in the blood, and found exceedingly wide variations, evidently due to varying rates of absorption. Contrary to expectation, the therapeutic effect was as good in patients with a blood concentration of under 3 mg. per 100 c.cm. as in those in whom it lay between 10 and 18 mg. This is quite at variance with what would be expected by analogy with sulphanilamide treatment, and whatever the explanation of this observation it illustrates the need for the further controlled study on which American authors are now insisting. The facilities for this study, especially in connexion with pneumonia, are immensely superior in the United States to any that exist here; and just as their results with serum have been far more significant than any obtained elsewhere so no doubt in time will those of their trials of M. & B. 693. American criticism of the investigations so far reported in this country seems to us excessive; but all will agree that much remains to be done in studying the action of the drug, and we can only be glad that the vast organisations and unrivalled experience available in the United States should now be taking this task in hand.

FIFTY YEARS OF LONDON GOVERNMENT

THE jubilee of the London County Council is worthily commemorated by the publication of a history,[5] written at the instance of the council by Sir GWILYM GIBBON and Mr. REGINALD W. BELL, of what our greatest local-government authority has done in the 50 eventful years that

1. Bullowa, J. G. M., Plummer, N., and Finland, M., *J. Amer. med. Ass.* Feb. 11, 1939, p. 570.
2. *Ibid*, p. 538.
3. Barnett, H. L., Hartmann, A. F., Perley, A. M., and Ruhoff, A. B., *Ibid*, p. 518.
4. Flippin, H. F., Lockwood, J. S., Pepper, D. S., and Schwartz, L., *Ibid*, p. 529.
5. History of the London County Council, 1889–1939. By Sir Gwilym Gibbon, C.B., C.B.E., D.Sc., and Reginald W. Bell, LL.M., Barrister-at-Law. London: Macmillan and Co. Pp. 696. 21*s*.

have gone by since Lord ROSEBERY presided over its first meeting on March 21, 1889. The authors provide a penetrating analysis of the difficulties and complexities of local administration and of the important tendencies of its modern development in England. One is the gradual merging of ad-hoc bodies in a central directly elected authority. When the London County Council was constituted, the school board was the local authority in London for elementary education, hospitals for infectious diseases were provided by the Metropolitan Asylums Board, and public assistance was administered by the boards of guardians. By a series of statutes passed between 1903 and 1929 these bodies were abolished and their powers and duties transferred to the London County Council. These administrative changes, and further developments initiated by additional legislation, greatly increased the diversity of the functions fulfilled by the council. As the successor of the Metropolitan Board of Works—a body now remembered chiefly for the malpractices of a few of its members and officers, and not for the benefits it conferred upon Londoners by its street clearances, its provision of the Victoria, Albert, and Chelsea embankments, and other manifest improvements—the council was at first concerned only with environmental conditions, such as main drainage, highways, and building control. Now it administers important personal services: education, hospitals, mental services, the treatment of venereal diseases and tuberculosis, the welfare of the blind, midwifery services, and public assistance, including the medical care, institutional and domiciliary, of the indigent. The administration of these services now accounts for more than 70 per cent. of the council's total expenditure.

These wide extensions of function have necessitated corresponding increases of personnel. The total staff employed by the council, which in 1891 was 3700, is now nearly 78,000. Of these, 18,400 are matrons or nurses, 18,300 are teachers, 13,600 are domestic staff, 11,200 are engaged in administrative, clerical or supervisory duties, and about the same number in engineering, operative, or repair work. The control of this enormous body of workers involves formidable problems of recruitment, promotion, management and discipline; in dealing with these the council has evolved methods which, as the results of long practical experience, have achieved remarkable success.

The increase in the council's provision of medical services is chiefly due to the assumption, under the Education Act of 1903, of its duties as London's education authority, and the transfer to it, under the Local Government Act, 1929, of the functions previously fulfilled by the boards of guardians. The council was one of the first of our education authorities to bring the doctor into the school. Under the guidance of its first school medical officer, Dr. JAMES KERR, the foremost British pioneer in school hygiene, the medical inspection of school-children was begun in London in 1905, two years before it became compulsory for the whole country. Great hygienic improvements were effected in the construction and ordering of school premises, in educational methods, and in the condition of the children, and special provision was made for children who physically or mentally are not up to normal standards. Medical treatment was provided on a rapidly increasing scale. There are now 81 treatment centres at which annually 140,000 children receive dental treatment, 13,500 treatment for ear, nose, and throat complaints, and 125,000 treatment for minor ailments. Every year 25,000 prescriptions for spectacles are issued. In this work 266 doctors give part-time service. Only those who were familiar with elementary schools at the beginning of the century can appreciate the vast changes that have since been made. An even greater extension of the council's functions in providing medical services was brought about by the Local Government Act, 1929, which transferred the powers and duties of the many London authorities administering the poor-law to the council. The separation of the care of the sick from that of the able-bodied inmates of institutions was a formidable task. No sudden or drastic changes were made, but the intention to provide first-class hospital treatment for the sick has been carried out methodically and with brilliant success. Since April, 1938, all the council's hospitals—acute, chronic and special—have been administered under its public-health powers. Three million pounds have been spent on hospital improvements during the last 10 years. There are now some 35,000 beds available in the general and special hospitals—apart from about the same number in mental hospitals—and a fleet of more than 150 ambulances is in commission to serve them. Year by year there have been developments in the provision of pathological, specialised and consultant services, outpatient departments, convalescent hospitals and maternity services. Of the council's medical staff of 900, 400 are full-time hospital residents. Its hospitals play an increasing part in medical education; 16 general hospitals are affiliated to the undergraduate teaching schools, and the British Postgraduate Medical School is attached to Hammersmith Hospital. The mental-hospital service has expanded on the most modern lines in respect to classification, treatment, occupation and aftercare, and also provides educational facilities.

It is naturally in the developments of the public-health services of the council that the doctors of London will take special pride. They will reflect that the direction of the staff of a public-health department which numbers well over 20,000 workers requires personal qualities of an exceptional kind in its chief officer, and that the council has been well served by its medical officers of health. In Sir SHIRLEY MURPHY, Sir WILLIAM HAMER, and Sir FREDERICK MENZIES it has had a succession of departmental chiefs whose work has won for them a world-wide reputation. It is in no small measure due to the council's acumen in selecting officers for positions of onerous responsibility that Londoners are able to view with justifiable satisfaction the achievements of the last fifty years.

ANNOTATIONS

TWO CORTICAL HORMONES

SOME time ago we alluded [1] to the possibility that there might be two hormones, with different physiological activities, in extracts of suprarenal cortex. It appears that this is indeed the case, for Hartman and his co-workers [2] report that they can separate suprarenal extracts into two fractions. The first contains a factor, cortin, which will keep suprarenalectomised animals alive and well for many weeks, though their serum-sodiums remain exceedingly low; the second contains a factor that causes a retention of sodium chloride by the animals and raises the serum-sodium. This second factor apparently does not maintain life; and this is rather strange, since the administration of sodium salts has been shown to secure the survival of suprarenalectomised dogs over long periods.[3]

The separation of these two factors should be a very valuable step in the elucidation of the functions of the suprarenal gland. From the clinical point of view it is obvious that many of our difficulties in treatment may have been due to the fact that our extracts of the gland contained different amounts of the two hormones; for although the sodium hormone seems not to be essential to the cat there may very well be species differences and it may be much more important to man. It will be interesting to see which of these two hormones controls the hypoglycæmic aspects of suprarenal deficiency and which the level of potassium in the blood. Further discoveries may now be awaited with confidence and it is to be hoped that they may lead to more effective therapy.

COMPLEMENT FIXATION IN LYMPHOCYTIC CHORIOMENINGITIS

RECOVERY from certain virus diseases, such as yellow fever, is followed by the appearance of virucidal antibodies in the blood in high titre for long periods and probably for life. The presence or absence of these immune bodies therefore gives definite evidence of whether a person has ever suffered from yellow fever. In other virus diseases, such as psittacosis, virucidal antibodies are either absent or present only for short periods: this is true of lymphocytic choriomeningitis. Since lymphocytic choriomeningitis is by no means easy to distinguish clinically from other forms of benign lymphocytic meningitis, a reliable method of diagnosis is of considerable importance. As in psittacosis, complement fixation appears to provide such a method. Complement fixation was first demonstrated in lymphocytic choriomeningitis by Howitt [4] in the presence of mixtures of a suspension of guineapig brain infected with the virus and hyperimmune serum from guineapigs. The test has recently been applied to the diagnosis in man in France by Lépine, Mollaret and Sautter [5] and in the United States by Smadel, Baird and Wall.[6] The organs of mice dying of the disease do not provide satisfactory antigen, while the spleen, liver and brain of guineapigs may give somewhat inconstant results, presumably owing to variations in their virus content. The most satisfactory antigen appears to be provided by the lungs of guineapigs acutely ill as a result of infection with the virus of lymphocytic choriomeningitis. The French workers in studying the reaction in sixteen persons who had been experimentally infected with the disease found that complement-fixing antibodies appeared in the sera of all, usually about the eleventh day of illness. Complement fixation was strongly positive 132 days later, feebly positive up to 172 days and consistently negative after 199 days. The American workers have shown that complement fixation depends on the presence in the tissues of a soluble specific antigen, since the virus freed from the soluble antigen fixes complement poorly or not at all.

1. *Lancet*, 1937, **2**, 1498.
2. Hartman, F. A., Spoor, H. J., and Lewis, L. A., *Science*, March 3, 1939, p. 204.
3. Harrop, G. A., Soffer, L. J., Nicholson, W. M., and Strauss, M. B., *J. exp. Med.* 1935, **61**, 839.
4. Howitt, B. F., *J. Immunol.* 1937, **33**, 235.
5. Lépine, P., Mollaret, P., and Sautter, V., *C.R. Soc. Biol. Paris*, 1938, **129**, 925.
6. Smadel, J. F., Baird, R. D., and Wall, M., *Proc. Soc. exp. Biol., N.Y.* 1939, **40**, 71.

THE SYME ORATION

Sir Alfred Webb-Johnson last Saturday delivered the Syme oration to the Royal Australasian College of Surgeons. He was the bearer of messages from Queen Mary and from the Royal College of Surgeons of England and he also took various gifts linking the new college with its forerunners in this country. From Lord Ebbisham came a copy of Sidney Young's "Annals of the Barber Surgeons"; from Sir Cuthbert Wallace a copy, given him by the author, of Sir William MacCormac's volume celebrating the centenary of the Royal College of Surgeons of England; and from the Syme lecturer himself some of the writings of Sir Charles Bell, a copy of South's "Craft of Surgery," and a portrait of Lister, by Francis E. Hodge, after the one by W. W. Ouless that hangs on the staircase in Lincoln's Inn Fields.

As the title of his oration Sir Alfred took Surgery in England in the Making. In early Norman times two classes of men practised surgery, each of which formed a craft guild, which became the cradle of the corporate life of surgery in England. First there were the military surgeons, who represented the aristocracy of surgery and accompanied the king and nobles to the wars. These men had some degree of learning and, if not themselves trained in one of the continental schools of medicine, were in touch with those who had been so trained. The second were the barbers; for after various papal edicts had prohibited priests from practising surgery, their assistants, the barbers, began to practise on their own. The members of the guild of surgeons were not numerous and were often away at the wars, whereas the barbers were stay-at-home and many; whence the barbers' guild became a serious rival of the surgeons'. Even the formation of a conjoint faculty of physicians and surgeons in the reign of Henry VI failed to defeat the barbers. Later, the surgeons' guild was checkmated by the grant of a royal charter to the barbers by Edward IV, and the first senior warden of the incorporated company was serjeant-surgeon to the king. Thereafter peace was sought through coöperation, and in the reign of Henry VII a voluntary alliance was made between the surgeons and the barbers, which led to union of the two bodies in 1540 by act of Parliament in the reign of Henry VIII, commemorated by a painting by Holbein in Barbers' Hall that was later saved from the fire of London in 1666. By this union the surgeons gained municipal and corporate advantages and shared the splendid Barbers' Hall, which became, together with St. Thomas's and St. Bartholomew's Hospitals, a great teaching centre.

Union did not cure their differences, however,

and in 1745 the surgeons were incorporated as a separate company by act of Parliament and built a hall in the Old Bailey, at which the first masters of anatomy were Percivall Pott and William Hunter. This step was soon followed by the opening of private schools of anatomy, such as William Hunter's in Great Windmill Street, where the house now forms the dressing-rooms of the Lyric Theatre, the present stage-door being where the bodies were carried in for dissection. The governors of the new company did not adhere strictly to the regulations laid down by the act and so forfeited their powers. To put matters right the Royal College of Surgeons was established by royal charter in 1800 (300 years after the founding of the College of Physicians) and a new surgeons' hall was built where it stands today.

PRIMARY SUTURE OF SACROCOCCYGEAL SINUSES

THE much higher incidence of recurrences reported after excision and primary suture has hitherto deterred surgeons from treating sacrococcygeal sinuses in this way rather than by draining the wound and allowing it to heal by granulation. Thus Gage [1] of New Orleans quotes reports of a recurrence-rate of 33 per cent. with primary suture compared with 1 per cent. with the open method. Gage has however evolved a technique by which he has carried out primary suture in 42 cases without a single recurrence. In 10 of these the wounds became infected and the skin did not heal by first intention, but only 1 had to be reopened and all healed soundly in the end. Using the same method, L. H. Strug obtained primary healing of the wound in 52 of 54 cases and had no recurrence. Gage probably owes his success mainly to the care he takes to obliterate the dead space left in the wound after the sinus and its accompanying cysts and secondary tracts have been excised. Previous observers [2] have pointed out that a large subcutaneous space, almost necessarily infected, is bound to become filled with granulation tissue and to form fresh sinuses to the surface, and this is the difficulty that packing the wound and allowing it to granulate from below upwards is intended to overcome. According to Gage there are three causes of failure in primary suture—all under the control of the surgeon. These are infection of the deep parts of the wound; failure to remove all the secondary sinuses; and non-obliteration of the dead space. When there is acute infection he is content with simple incision and drainage, and allows six months to elapse before attempting radical cure. When the presence of accessory sinuses points to recent secondary infection he insists on ten days' preparation of the operation site with hot tub baths and hot compresses of hypertonic saline. To ensure that the primary and all accessory tracts are removed as completely as possible, Gage advises the preliminary injection of methylene-blue. McKirdie,[3] on the other hand, regards the use of dye as of questionable value, for in his opinion it is likely to be injected either with too much force, when it opens up non-infected spaces, or with too little so that it does not penetrate the smaller radicles and gives a false sense of security. Lipiodol infection is recommended by both Gage and McKirdie when it is wished to demonstrate radiologically the connexion between a sinus and the sacral canal, though it is probably best omitted when there is active infection. Complete excision of the various tracts with removal of the minimum of subcutaneous tissue makes subsequent obliteration of the dead space easier, and all bleeding must be stopped. Gage inserts his deepest sutures so as to fix the subcutaneous tissues to the periosteum. He closes the wound and then applies direct pressure by means of a sterile marine sponge applied wet and held in position by adhesive strapping. The dressing is left undisturbed for 10–12 days.

1. Gage, M., *Ann. Surg.* February, 1939, p. 291.
2. Rogers, H., and Dwight, R. W., *Ibid*, 1938, **107**, 400. See *Lancet*, 1938, **1**, 1343.
3. McKirdie, M., *Ann. Surg.* 1938, **107**, 389.

PSYCHOTHERAPY IN GENERAL PRACTICE

THE general practitioner has always used psychotherapy but only in recent years has he consciously based his approach to functional disease on defined principles. These are usually derived from more than one school of psychopathology and the manner of their application is liable to vary not only with the needs of the patient but with the time at the practitioner's disposal. This time-factor affects his technique much more than it does that of a specialist, and indeed the success of his travels along tortuous psychological paths is likely to depend on his skill in finding short cuts. Some that have proved serviceable in general practice are outlined by Dr. Martin Raven in a modest account of the fruits of his own experience.[1] He disposes first of the precept, which used to be taught in medical schools, that before diagnosing a case as functional it is essential to exclude the possibility of organic disease; this "is beyond the power of man." Doctors whose minds have been over-impressed with the danger of missing a physical lesion are liable, after an unsuccessful search for one, to fall back on such unsatisfactory labels as intestinal toxæmia, endocrine imbalance or tired heart. Dr. Raven advises them instead to assume the presence of functional disease and to test the assumption by exploring the patient's complaints for such characteristics as a remarkable diversity or an obvious exaggeration of symptoms and for their projection to areas which have previously been the site of organic trouble. To deal adequately and rationally with such symptoms without giving the patient another peg to hang a complaint on, or increasing his sense of self-importance by prolonged and inconclusive investigations, is no easy task. But the most formidable difficulty, when symptoms persist, is to introduce the idea that they are the result of emotional disturbances rather than of physical disability, without losing the confidence of the patient. To achieve this end the practitioner is advised to adopt at first a passive rôle, encouraging the patient to talk not of his physical sufferings but of his psychological life-story. In the course of informal sessions evidence may emerge of a withdrawal of a valued emotion, leading to a disillusionment that may not even be admitted but proves to be the key to the neurosis. Dr. Raven says that when he begins his own innings of talking he finds it useful to explain the need for a reasonable balance between the acquisitive, the reproductive, and the herd instinct if social poise is to be maintained. Knowing well that the patient's emotional life is mostly at faut he starts, as a matter of policy, with the investigation of the other instincts. He seeks evidence first of such common symptoms as a tendency to over-spend or over-save money, or of a failure to take the slightest interest in the daily news; the doings of dictators and democracies are not of the least concern to the neurotic as compared with

1. Raven, M. O.: *Practitioner*, February, 1939, p. 213.

his own troubles. Here are pointers to constructive rebuilding. It is to be regretted that Dr. Raven does not give more details of the manner of his transition to the emotional side of the story, but he offers other good advice of a general nature: to foster a humorous outlook, to remember the occasional need for a "face-saver" and to avoid the mistake of deflecting attention from personality to environment until all efforts to secure adjustment have failed. Removal of a troublesome patient to some sort of retreat may be recommended in order to give respite to long-suffering relatives, but from the patient's point of view this measure is only justifiable as a last resort. There is a refreshing absence of jargon and much common sense in this scheme of attack on disorders which prove disheartening to all concerned unless they are tackled with insight.

TROPICAL MACROCYTIC ANÆMIA

Wills [1] first showed in 1931 that patients with tropical macrocytic anæmia responded as well to Marmite as they did to crude liver extracts and were also able to secrete free hydrochloric acid; they thus differed in two important respects from those with addisonian pernicious anæmia. It was therefore suggested that the mechanism of the deficient production of the active liver principle was different in the two conditions. Marmite was regarded as a source of Castle's extrinsic factor and tropical macrocytic anæmia was thought to be due to a deficiency of extrinsic factor only. Subsequent work, recently reviewed by Napier,[2] has modified this view. Tropical macrocytic anæmia has been shown by Napier, by Wills and Evans[3] and by Fairley and Bromfield[4] to respond to impure liver extracts like Campolon and Hepastab but to be unaffected by anahæmin, a highly purified fraction effective in pernicious anæmia. These observations have led to the suggestion that in tropical macrocytic anæmia the deficient substance is not Castle's extrinsic factor but an independent hæmopoietic principle present both in autolysed yeast and in impure liver fractions. Napier and Fairley are both impressed by the part played by hyperplasia of the reticulo-endothelial system, produced by malarial infection, in the ætiology of tropical anæmia. Napier [5] regards excessive hæmolysis due to such hypertrophy of the reticulo-endothelial system as the factor necessary to convert an adequate diet into an inadequate one. A good mixed diet supplies sufficient hæmopoietic principle to make good normal wear and tear, but in the presence of abnormal cell destruction the poor diet of many natives fails to do this and macrocytic anæmia results. Napier points out that on the whole lower levels of serum-bilirubin are found in tropical anæmia than in addisonian pernicious anæmia. It must, however, be remembered that now that untreated cases of long-standing pernicious anæmia are rare it is exceptional to find a high level of serum-bilirubin in this condition (Vaughan and Haslewood [6]). Napier also suggests that the level of serum-bilirubin is a measure of hæmolysis, but Watson [7] has shown that bilirubin levels are controlled by liver efficiency rather than the rate of hæmolysis. In the present state of knowledge it seems unwise to classify anæmias as hæmolytic or non-hæmolytic on a basis of serum-bilirubin only. As Napier says, careful quantitative work with purified fractions of liver and autolysed yeast is needed if the part played by different hæmopoietic principles is to be clarified, and quantitative studies of pigment metabolism are also required if the differences between these closely allied macrocytic anæmias are to be elucidated.

1. Wills, L., *Brit. med. J.* 1931, **1**, 1059.
2. Napier, L. E., *Indian med. Gaz.* January, 1939, p. 1.
3. Wills, and Evans, B. D. F., *Lancet*, 1938, **2**, 416.
4. Fairley, N. H., and Bromfield, R. J., *Trans. R. Soc. trop. Med. Hyg.* 1938, **32**, 132.
5. Napier, *Lancet*, 1936, **2**, 679.
6. Vaughan, J. M., and Haslewood, G. A. D., *Ibid*, 1938, **1**, 133.
7. Watson, C. J., *Arch. intern. Med.* 1937, **59**, 206.

PSITTACOSIS AND FULMAR PETRELS

Rasmussen's [1] conjecture that the epidemic pulmonary disease of the Faroes is a form of psittacosis has been confirmed by Haagen and Mauer [2] in Berlin. They examined material both from birds and from Faroe islanders who had contracted the disease. By staining methods, intraperitoneal inoculation and passage experiments in mice, and intramuscular inoculation of young budgerigars they have proved the identity of the virus of the Faroes epidemic with that of psittacosis. Haagen and Mauer say that the young petrels are caught on the cliffs before they are fully fledged, and that they try to defend themselves by striking with their wings and thus scatter the dust from their down. This dust is supposed to bear the dried virus and is inhaled by the islanders when catching the birds. The Faroe women are most liable to catch the infection when they pluck the petrels in a stuffy room; in fact the incidence of the Faroes epidemic was greater among the women than among the men. In this connexion it is significant that the infection of human beings by parrots with psittacosis occurs chiefly when the birds are moulting. Haagen and Mauer claim that, since this disease has now been shown not to depend on birds of the parrot family alone, it should no longer be called psittacosis, and they suggest two terms, epidemic pneumonia and virus pneumonia, neither of which, however, seems very happy. The danger of other close communities of birds, especially seagulls, as a source of infection to man is pointed out. Seagulls have already been accused, but not proved guilty, of spreading foot-and-mouth disease.

SURGERY THROUGH THE AGES

Mr. Harvey Graham has presented the history of surgery from the earliest to modern times—with a glimpse into the future—as an absorbing story, to which Dr. O. St. John Gogarty contributes an entertaining foreword.[3] In its separate parts the story is perhaps less unfamiliar than the modest preface seems to suggest; but we can recall no narrative connecting them in proper perspective that is at once so accurate and so coherent as this one. The author's task must have been laborious. It has taken him into many different departments of human knowledge, enterprise and experiment, and clearly involved a discriminating study of many more authorities than are named in the three pages of bibliography. Mr. Graham begins with an account of the surgery of primitive man, drawing an imaginary picture of the first trepanning of the skull, the earliest and in fact the only primitive operation of which we have any knowledge. From this point he pursues the developments of surgery through the civilisations of Egypt, China, India, Greece, Alexandria, Rome and the Middle Ages. So far his book is essentially world-wide in its scope; after the Renaissance, though there

1. See *Lancet*, 1938, **2**, 1036.
2. Haagen, von E., and Mauer, G., *Disch. med. Wschr.* Jan. 6, 1939, p. 13.
3. Surgeons All. By Harvey Graham. London: Rich and Cowan. 1939. Pp. 426. 18*s*.

are many references to the famous names of other lands, he gives the bulk of his space to surgery in England, tracing with especial detail the progress of the art in the 18th and 19th centuries. He also describes the sordid business of body-snatching, discusses the prevalent forms of quackery, gives examples of the amazing contentiousness of surgeons in the 18th century and displays with effective colour the triumphs of antisepsis and anæsthesia. It is no disparagement of the earlier part of a book whose design has been carefully drawn and balanced to note that when the author approaches the age of our grandfathers it gets exciting. Till then the story is efficiently and simply told: suddenly it begins to glow. Mr. Graham has arrived at the period which most interests him and he communicates his enthusiasm to his readers. His notes on the surgeons of our times and his vision of the future show that he writes with inside knowledge of our profession, though he does not use it in such a way as to restrict the range of appeal of his work. It will certainly be enjoyed and its illustrations will be appreciated by laymen as well as by doctors.

BRONCHIAL THERAPEUTICS

A FULLER explanation of spasmodic bronchial disease, notably asthma, seems to be near at hand. Knowledge of normal bronchial physiology is increasing and methods of experiment have been devised which allow of exact and unequivocal interpretation of bronchial reactions. Last year Maxwell Ellis [1] showed that bronchial muscle normally possesses a definite tone, which may vary slightly from time to time, and that it stretches to accommodate the inrush of air at each inspiratory movement. In a previous paper [2] he had illustrated the constricting effects of vagal stimulation and the relaxation following vagal paralysis and sympathetic stimulation. Others have observed similar phenomena, but the advantage claimed for Ellis's method, besides its sensitiveness, is that the condition of the experimental animal is almost normal, so that the results obtained are clinically applicable. Frenckner [3] and his associates use a similar method which they call bronchospirometry to measure the function of each lung separately.

Binet and Burstein [4 5] have lately investigated the action on the bronchial tubes of the choline derivatives, which are extremely powerful vagotonic substances and may in fact be the normal physiological activators. They use a modification of Einthoven's older method, and work either with the isolated lung or on an animal with its thorax opened, kept alive in a respirator. Differences in the intratracheal pressures are used to indicate changes in the bronchial lumina. Their results are clear-cut; they find that carbamyl-choline has the greatest constricting effect, and that this can be both prevented and antagonised by adrenaline, atropine, and ascorbic acid. The last result is important, and if it is confirmed when a more physiological experimental method is used it should open up a fresh aspect of asthma therapy.

As a corollary to these investigations Bourgeois, Chauveau and Dos Ghali [6] report the case of a man of 37 who had suffered from recurrent hæmoptysis and had coughed up copious mucopurulent sputum since the age of 15. A diagnosis of bilateral generalised bronchiectasis was made and it was decided to employ Arnulf's method of infiltrating the stellate ganglion with procaine. The result was immediately successful. After nine injections his sputum diminished from its former 600–700 c.cm. to 80 c.cm. a day and his general condition improved enormously. It is difficult to explain this result, but the local anæsthetic may have spread to vagal fibres and so paralysed the secretory bronchial glands.

1. Ellis, M., *Lancet*, 1938, **1**, 819, 223.
2. Ellis, *J. Physiol.* 1935, **84**.
3. Frenckner, P., *Acta oto-laryng., Stockh.* 1934, suppl. **20**.
4. Binet, L., and Burstein, M., *Pr. méd.* Feb. 11, 1939, p. 217.
5. Binet and Burstein, *Bull. Soc. méd. Hôp. Paris*, Feb. 27, 1939, p. 267.
6. Bourgeois, P., Chauveau, J., and Dos Ghali, J., *Ibid*, p. 247.

THE ROYAL SOCIETY ELECTIONS

AMONG the 20 newly elected fellows of the Royal Society set out on another page we welcome 5 medical men. The monumental contribution to descriptive human morbid histology of H. M. Turnbull reaches far beyond the observations published under his name; he has been tireless in placing his vast store of knowledge at the disposal of colleagues and in the encouragement and guidance of his pupils. C. H. Andrewes is one of the younger members of the team of experimental pathologists at the National Institute for Medical Research who first transmitted influenza virus to ferrets and mice; he has also worked on fowl tumour viruses and has thrown light on the mode of action and properties of antiviral sera. F. A. E. Crew has directed a school of research into animal genetics and the biology of sex and of reproduction. E. G. T. Liddell has made notable contributions to the physiology of the nervous system. V. B. Wigglesworth has done original work on several aspects of the physiology of insects. Among those not medically qualified whose researches are indirectly associated with medicine are F. W. Edwards, who is an authority on diptera and culicidæ, and G. S. Adair, who has worked on the physical chemistry of proteins particularly in connexion with hæmoglobin. E. J. Maskell is doing experimental work in plant physiology, especially in relation to translocation, and G. W. C. Kaye, a former president of the British Institute of Radiology, is an authority on X-ray measurements, acoustics, and the physical aspects of radiotherapy.

THE EFFECTS OF A.T. 10 ON METABOLISM

A FEW months ago [1] we referred to comparisons made by Albright and his colleagues of the actions of vitamin D, A.T. 10 (dihydrotachysterol), and parathyroid hormone in cases of idiopathic hypoparathyroidism. These patients were chosen for study in order to eliminate complications through variations in the spontaneous activity of the parathyroids. It was found that both vitamin D and A.T. 10 increased calcium absorption from the gut and urinary-phosphate excretion, the former action being predominant with vitamin D, and the latter with A.T. 10. The primary action of parathyroid hormone (tested on one of the three cases) was solely to increase urinary-phosphate excretion. These observations have now been extended [2] by the study of a boy, aged 17, with rickets resistant to vitamin D. Previous investigation had shown that the metabolic abnormality in this patient was the same as that in ordinary rickets, but massive doses of vitamin D were required to control the condition. Administration of A.T. 10 produced a distinct increase in the amount of calcium absorbed from the gut and the serum-calcium was raised from 9·9 mg. per 100 c.cm. to 13·3 mg. per 100 c.cm. The increase in the urinary-phosphate output and the negative phosphorus

1. *Lancet*, 1938, **2**, 1368.
2. Albright, F., Sulkowitch, H. W., and Bloomberg, E., *J. clin. Invest.* January, 1939, p. 165.

balance were not so pronounced as in the patients with hypoparathyroidism; the diminution of the effect on phosphate metabolism is attributed to decreased activity of the parathyroids brought about by the raised serum-calcium. While administration of Parathormone greatly increased the urinary-phosphate excretion, massive doses of vitamin D had no such effect in this patient; in fact the increased absorption of phosphorus from the gut associated with a daily dose of 1,500,000 units of vitamin D led to a positive balance of nearly 0·5 g. phosphorus per day. The fact that A.T. 10 increases urinary-phosphate excretion so much more than calcium absorption is offered as an explanation of why this substance is not anti-rachitic. The effect of the three substances on calcium and phosphorus metabolism in the cases investigated is provisionally summarised as follows: calcium absorption, vitamin D +++, A.T. 10 +, parathyroid hormone 0; phosphorus excretion in urine, vitamin D +, A.T. 10 +++, parathyroid hormone ++++.

POSTENCEPHALITIC PARKINSONISM

IN few chronic diseases does the hope not merely of improvement but of complete recovery seem to the lay mind so fully warranted as in the disorders left by Economo's lethargic encephalitis. Even after years of mental or bodily impairment, or both, many sufferers have occasional short intervals in which they seem quite suddenly to be their old selves again. The parkinsonian who sits day after day crippled and bent in his chair may on some sudden excitement jump up and run across the room as well as ever he did. These temporary returns of the patient to normality naturally keep alive in his anxious relatives the feeling that, as in the hysteric, something may be found some day which will restore him to complete health. To the medical man such hopes are vain. Whatever may be the real nature of either, chronic epidemic encephalitis and hysteria are not one and the same.

For the last twenty years it has been known that the atropine group of alkaloids can relieve the muscular stiffness and excessive salivary outflow in these cases, provided they are given in sufficient amount and the treatment is continued. Although these appear to be the limits of their direct action, yet the euphoria to which this relief gives rise reacts favourably on the whole system. One can only compare the astonishing effects in some cases with the improvement brought about in pernicious anæmia by liver extract or in myxœdema by thyroid; but, as in these latter, relief only goes on so long as treatment is continued. From time to time various forms of the atropine series have been lauded as more efficacious than the rest, and there is a curious similarity in their successive claims, methods and reported results. Treatment is carried out at an institution, sometimes for this special kind of case only, under a strict regime of diet with massage or gymnastic exercises. In these respects there is some resemblance to a spa, and unfortunately the word cure has been attached to some of these methods as it has to our spas. In English the word "cure" implies "complete recovery," whilst in German it only means "a line of treatment"—a very different thing. This somewhat confusing word cure has lately been applied to the treatment of parkinsonism by the Bulgarian form of belladonna. Put to the crucial test of giving them unknown to the patient, without any other kind of treatment, the preparations of the Bulgarian root have repeatedly been shown to do neither more nor less than those of roots grown elsewhere. Possibly they may have some slight superiority in convenience of dosage, in the absence of unpleasant effects, or in other minor ways, as Dr. Neuwahl points out in this issue; but the results as regards complete restoration to health by the so-called *Bulgakur* cannot be said to have been substantiated. There is no doubt that a course of institutional treatment with the associated encouragement, amusement and occupational hygiene, to say nothing of the personal interest taken in the individual patient, offers great help to the chronic encephalitic. If in addition some form of atropine therapy in sufficient dose and suitable form is adopted the benefit is occasionally dramatic and may continue for a long time, provided the treatment is kept up.

THE HEALTH RESORTS

"British Health Resorts," the official handbook of the British Health Resorts Association, is published this year for the first time as the property of the association, and it contains additional matter on medicinal waters and the action of different kinds of baths, together with facts about temperature, sunshine, and humidity, and maps and photographs which convey a great deal of useful information. The particulars of the separate spas have been revised after making visitations during the past two years to the resorts by arrangement with the British Spas Federation, and new meteorological statistics embellish the attractive section on "the invalid's winter on the coast." The Minister of Health contributes a foreword, in which he says that the spas play their part in the national fitness campaign and forecasts an increased resort to them as a result of holidays with pay.

The handbook may be had from the association (Tavistock House South, Tavistock Square, London, W.C.1) at 2*s.* 6*d.* In compiling the present issue the editor, Dr. Fortescue Fox, has had the assistance of Dr. Wyndham Lloyd.

We regret to announce the death on March 20 of Dr. J. S. RISIEN RUSSELL, consulting physician to the National Hospital, Queen Square, W.C.1.

We have also to report that Dr. ROY DOBBIN, professor of midwifery and gynæcology at Cairo, died in Egypt on March 21.

On April 5, at 5 P.M., Prof. RENÉ LERICHE, Hon. F.R.C.S., will deliver the Lister memorial lecture to the Royal College of Surgeons of England.

Next Monday Messrs. J. and A. Churchill Ltd. will publish "Medical Organisation and Surgical Practice in Air Raids," by Mr. P. H. Mitchiner and Mr. E. M. Cowell. This is a book to which our readers need no introduction, for portions of it have been appearing weekly in our columns since the beginning of the year under the title "The Air-raid." We understand that the volume will contain additional information and a fuller treatment of the subject, together with many illustrations.

WOMEN IN RUSSIA.—It is stated that some 10,000,000 women in Soviet Russia are employed in factories and offices, and 19,000,000 on collective farms. The number of women doctors is given as 53,400 and there are more than 12,000 scientific workers. In 1937 over 20 per cent. of the 29,000,000 women employed were working in the education and public-health services, and 40 per cent. in industry and the building trades.

Since the law prohibiting abortion and subsidising large families was passed in June, 1936, over 2,000,000,000 roubles have been paid in bonuses to mothers.

SPECIAL ARTICLES

EFFECTS OF LEAD ON THE BODY

INDUSTRIAL workers in many processes are exposed to the risk of lead poisoning, but fortunately the risk is known and preventive measures have been adopted with the result that the numbers of cases of industrial lead poisoning in this country have fallen from 1058 in 1900 to 141 in 1937. The risk of poisoning from lead in public water-supplies is also now well under control. It has been suggested however that the general population are being exposed to small but increasing amounts of lead from such sources as the fumes of tetra-ethyl lead in petrol, sweets and chocolates, canned foods, and fruit and vegetables which have been treated with insecticides containing lead arsenate. The lead paint used on buildings becomes weathered into dust in the course of time and doubtless contributes to the amount of lead liable to be absorbed, though this factor is probably not as important here as in hot dry climates.

The presence of lead in various foodstuffs has been dealt with in detail by Monier-Williams,[1] and Minot [2] has recently reviewed the known facts about the effects of small amounts of lead absorbed into the body. Fortunately for a study of this kind, delicate, specific and accurate tests for lead have been discovered during the last fifteen years, the one most favoured being the "dithizone" test based on the reaction between lead and di-phenyl-thio-carbazone. Monier-Williams finds that the most satisfactory modification of this test is one that involves the extraction of lead with dithizone, precipitation as the sulphate, and determination colorimetrically as the sulphide. Fairhall, who introduced a quantitative titration method of estimating lead as chromate in biological material, also describes a qualitative microchemical test based on the formation of characteristic crystals of a complex potassium-lead-copper hexanitrite.

NORMAL INTAKE AND THE POISONOUS DOSE

Minot states that the amount of lead absorbed and retained in the body even in fatal cases of poisoning is usually less than a gramme. It is important therefore to estimate as accurately as possible how much lead the average individual absorbs and excretes in a day, and also to establish the margin between this small amount and the quantity which is likely to cause clinical lead poisoning. Aub and his co-workers in Boston in 1926, using Fairhall's method, found no lead in the urine and tissues of individuals who had not been unusually exposed to lead. On the other hand Kehoe and others in Cincinnati in the same year found (with the diphenyl carbazide test) small amounts of lead in each of 65 normal people.

Since then other workers, using various methods, have found that lead is a normal constituent of the excreta and body tissues of people living under present-day conditions even when they are not exposed to lead in industrial processes. Tompsett and Anderson, for instance, working in Glasgow in 1936 and using the dithizone method, found lead in all the tissues analysed of 20 people not exposed to lead in their occupations. More lead was found in the bones than in any other tissue, and it was noteworthy that the tissues of a child aged two years contained lead in about the same concentrations as those of an adult.

The uniformity of the results obtained by independent investigators in widely separated parts of the world leaves no doubt that the average individual in modern civilised communities ingests or inhales small amounts of lead, probably from 0·2 to 0·4 mg. daily. Excretion more or less keeps pace with intake but some lead is retained in the body and may be detected in the blood and the soft tissues, though most is stored in the bones and teeth.

Estimates of the amounts of lead which can cause poisoning vary greatly, some workers putting the figure at 10–20 mg. and others as low as 1 mg. a day. Minot rightly points out that attempts to predict the danger of a given exposure to lead result at best in rough estimates because individuals differ widely in their susceptibility, and because the path of entry largely determines the onset and severity of the clinical signs and symptoms. Fat-soluble organic compounds of lead, such as tetra-ethyl lead, are absorbed through the skin, but other forms of the metal enter the body through either the respiratory or the alimentary tracts. Not all lead taken into the stomach is absorbed into the general circulation, for non-soluble compounds are excreted in the fæces and soluble compounds are carried to the liver, where some of the lead is either stored or excreted in the bile and the rest is distributed to other tissues of the body. When lead is introduced into the respiratory tract it reaches the general circulation rapidly, and therefore lead which is inhaled is more dangerous than that which is ingested.

FATE AFTER ABSORPTION

Complete agreement has not been reached about the biochemical behaviour of lead in the body. Fairhall and Shaw and Aub and his co-workers say that lead is probably transported in the blood as the more soluble di-lead phosphate, and is stored in the bones as the insoluble triple phosphate. On the other hand Maxwell and Bischoff are of the opinion that lead is carried in the blood as diphospho-glycerate, whereas Jowett presents evidence that lead forms a complex inorganic phosphate containing calcium and chlorine. Whatever the form in which lead is carried in the blood it is stored in the bones as the triple phosphate, which under conditions of slightly increased acidity can be converted into a more soluble lead salt and excreted either through the kidneys or the alimentary tract.

A close analogy exists between lead and calcium in their distribution, storage, mobilisation and excretion, and for this reason the state of the calcium nutrition, the acid-base equilibrium, and the activity of the parathyroids all play a part in determining whether lead retained in the body is stored harmlessly in the bones or whether it circulates in the blood-stream and attacks the tissue cells. The amount of lead excreted in the urine is a better indication of the risk to health than the fæcal lead, because if lead appears in the urine it must have been absorbed into the blood. Kehoe and others, after extensive studies of persons industrially exposed to lead, came to the conclusion that if not more than 0·15 mg. of lead is passed in the urine each day the exposures will probably not result in clinical plumbism. Other workers have set the figure lower than this but all the estimates given are much higher than the amounts

1. Monier-Williams, G. W., *Rep. publ. Hlth med. Subj., Lond.* No. 88, 1938. See *Lancet*, 1938, **2**, 1371.
2. Minot, A. S., *Physiol. Rev.* 1938, **18**, 554.

reported to be present in the urine of individuals who have not been unusually exposed to lead.

Very various estimates have been made of the concentrations of lead in normal blood, but there is a reassuring difference between the amounts found in normal people and in cases showing early signs of lead poisoning. The figures range, with different methods and investigators, from 0·0–0·2 mg. per 100 c.cm. in people not industrially exposed to lead to 0·38 mg. per 100 c.cm. in patients with lead poisoning. S. L. Tompsett and A. B. Anderson, who had previously suggested that the estimation of blood-lead appears to be a more satisfactory method of investigating cases of poisoning than the determination of the excretion of lead, recorded in THE LANCET of March 11 the quantities of lead obtained in the blood and excreta of 29 suspected cases of lead-poisoning. In 10 out of 11 cases in which the diagnosis was confirmed the lead content of the blood was higher than 0·1 mg. per 100 c.cm. (100 μg. per 100 ml.). In the remaining case the blood-lead was only 0·75 mg. per 100 c.cm., but 1·27 mg. of lead was excreted daily in the urine and fæces. This case was classified as one of chronic plumbism, and it shows that where there is doubt it may be necessary to determine the amount of lead excreted daily as well as the level of lead in the blood. These investigators suggest that lead-poisoning is probably present in cases in which more than 0·1 mg. of lead per 100 c.cm. is found in the blood, or in which more than 1 mg. of lead is excreted daily.

PHYSIOLOGICAL ACTION OF SMALL DOSES

The signs and symptoms of established lead poisoning are themselves so varied that attempts to assess the effect of small amounts of the metal on the human body must be very difficult. It is more useful therefore to study their effect on simpler forms of living organisms. Studies of the action of lead on fundamental biological processes are still somewhat fragmentary, but many interesting facts have been put on record. The growth of plants and animals is retarded when small amounts of lead are added to the nutrient media, the rate of growth becoming slower with increasing concentrations. There is some evidence that lead, through its action on enzymes, interferes with normal processes in living tissues. For example an increase in lipolytic activity in serum has been noted to follow the administration of lead; and very small amounts bring about a marked decrease in the oxygen consumption of the brain, kidney, liver and testis. In brain tissue lead almost completely abolishes the hydrogen transfer and markedly inhibits glycolysis. The rate of formation of immune bodies is also affected. In rabbits the production of hæmolysins and agglutinins is greatly increased but the formation of precipitins is retarded. The production of antitoxin against diphtheria is more rapid in animals receiving lead than in controls but no valid conclusions about immunity can be drawn from these results.

In the anæmia of lead poisoning the red cells show changes in the following order of frequency: (1) anæmic red cells, (2) anisocytosis, (3) polychromatophilia, (4) punctate basophilia or stippling, (5) poikilocytosis, and (6) nucleated red cells. Punctate basophilia does not occur in cats with lead poisoning, but it is a fairly constant feature of poisoning in man, rabbits and guineapigs. When washed red cells are exposed to the action of lead chloride they decrease in volume and become more rigid and brittle. Ørskov found that the shrinking of the red cells is accompanied by a rapid loss of potassium into the surrounding medium. These phenomena can be demonstrated in the blood of man and rabbits, but not in cats and goats. The close parallelism between the species in which this effect of lead on the red cells can be demonstrated and those in which anæmia and stippling are prominent signs in lead poisoning points to the fundamental importance of these changes in estimating the injurious action of lead. Exposure to lead shortens the life of the red cells in the circulating blood probably by the production of acid at the cell membrane, but the presence of inorganic phosphate in the blood-serum tends to protect the individual cells. In vitro the phagocytic power of the leucocytes is greatly reduced by exposure to lead but clinically in cases of lead poisoning the total white count is usually within normal limits. Some workers have however stressed the value of the polymorph-lymphocyte ratio as a prognostic sign in persons exposed to lead.

The effect of lead on the function of skeletal muscle is to produce more rapid fatigue and slower recovery, fatigued muscles being more susceptible than resting muscles, probably because the former have a higher lactic-acid content which increases the solubility of the lead. The paresis noted in cases of lead poisoning is said to be caused by direct action on the muscle-fibres rather than by interference with nerve conduction.

As shown by the colic and constipation of clinical plumbism, lead has a marked effect on smooth muscle, but it has long been a moot point whether the muscle-fibres are affected directly, through peripheral or central nervous mechanisms, or by a combination of these factors. Grünberg's experiments in 1928 on many types of smooth muscle showed that in those tissues in which stimulation of the sympathetic system caused contraction lead also caused contraction of the muscle-fibres, and in tissues to which sympathetic stimulation was inhibitory lead also caused a cessation of the contractions. He concluded that the effect of lead on intestinal activity is (1) to inhibit the movements by local stimulation of the sympathetic endings, and (2) to set up intestinal contractions by a central action on the vagus nerve.

The smooth muscle of blood-vessels is apparently affected by lead in the same way as are other types of smooth muscle. The action has been shown in vitro, but it is still uncertain whether it plays a significant part in the functional disturbances or the pathological lesions of lead poisoning. Hypertension is often present in cases of lead poisoning, but it is difficult to know whether lead is the causal factor or not. Careful statistical studies could give useful information on this point, and the results of those now available are conflicting. Some workers find that prolonged exposure to lead increases the blood-pressure, but Teleky after an extensive review of the literature concludes that up to the present there is no definite proof that high blood-pressure accompanies the early signs of lead poisoning, and he emphasises the need for further studies of the effect of prolonged absorption of small amounts of lead. It appears reasonable, however, to expect that vascular tone would be affected by an adequate concentration of lead in the blood-stream even if lead acts directly on vascular smooth muscle by stimulating the sympathetic nerve-endings. Indeed an impressive amount of clinical and pathological evidence goes to show that death in chronic lead poisoning is often due to cerebral hæmorrhage resulting from hypertension, and the kidneys in these cases show sclerosis of the arteries and arterioles with few points of

difference from kidney changes seen in malignant hypertension.

As regards the effect of lead on the nervous system, its presence in the brain, cord and spinal fluid when lesions of these structures are present in cases of lead poisoning leaves little doubt that lead is responsible for these abnormalities. The clinical manifestations in definite cases range from sluggishness, poor memory and irritability to the paralyses and convulsive seizures of lead encephalopathy. Some observers have recorded that people who have been long exposed to small amounts of lead show such symptoms as apathy, irritability, lack of confidence, unfounded fears, or inability to concentrate; and further that these symptoms diminish in severity when the source of poisoning is removed. Minot comments that an extensive study would be necessary to establish any general causal relationship between such symptoms and the absorption of lead.

In the present state of our knowledge we do not know what to look for in the average individual to establish the presence of slight damage from the absorption of small amounts of lead, and the usual signs and symptoms of plumbism can only be expected in the rare highly susceptible person. In some cases it might be suspected that lead is setting up mild constipation, a tendency to anæmia, fatigue of the muscles, hypertension, or impaired nervous and mental function but these are symptoms of which there are many possible causes. It is a matter of great concern whether modern practices concerning the use or abuse of lead are going to result in a gradually increasing lead exposure for the general population. Minot suggests that the most satisfactory way of tackling the problem would be to study at intervals the amounts of lead in the blood and urine of large and representative groups of people living in both rural and urban communities.

MEDICINE AND THE LAW

Alleged Responsibility of Local Authority for Doctors and Nurses

THE Manchester corporation was sued last week at Manchester assizes by the father of a boy who was alleged to have suffered from the negligence of doctors who were described as being the servants of the corporation. Kenneth Ball, aged 16, met with an accident in the yard of the Openshaw Technical School during a "sports lesson." He was sent to the Gorton clinic. Here, said counsel for the plaintiff, he was seen by a lady doctor who manipulated his arm; the arm was dressed by a nurse and he went back to school; next day he was told to attend the clinic every two hours; hot bandages were applied; later he was given a box of ointment to take home, for his mother to apply. Fifteen days after the accident, as the treatment was unsuccessful, he was sent to the Royal Infirmary; he was radiographed and was found to have a fractured elbow. "In ten days to a fortnight," said counsel, "the Manchester medical profession could not diagnose a fractured arm—just think of it, in a clinic." The arm had become inflamed and painful after one application of the ointment. Dermatitis developed and spread over the boy's arm, face and chest. Some weeks later an operation was performed; the patient was not passed fit till several more weeks had elapsed and even now it would be three or four months before he was able to do any work.

The corporation denied that the doctors or staff of the clinic were their servants so as to render the corporation liable. When the plaintiff's case was finished, counsel for the defendants submitted that there was no case against the corporation even if there had been any evidence of negligence on the part of the doctors and nurses. The corporation was exercising a function as the local education authority: there was a statutory duty to provide treatment, but the only legal obligation was to appoint efficient medical officers and nurses. This argument was presumably based on well-known decisions such as Hillyer *v.* St. Bartholomew's Hospital. To counter it, plaintiff's counsel contended that the negligence was administrative and not professional, inasmuch as it was not failure to diagnose a fracture but failure to use the proper facilities which the administrative authority had placed at the doctors' disposal. The judge said that the boy's claim, as substantially put forward in the pleadings on paper, was based on negligent treatment; "such treatment," said the pleadings, "was administered by a doctor or doctors, such doctor or doctors being servants and/or agents of the defendants." Plaintiff's counsel had complained of the failure to have the boy's arm examined by X ray. If the plaintiff complained of the method of diagnosis, was not that a matter for the medical profession? Could the corporation be liable for a delayed or faulty diagnosis, if that issue related to matters of medical discretion upon which the corporation could not give orders to the doctors? In the end the judge upheld the defendants' submission that there was no case against the corporation. He said he had considered very anxiously whether he should not let the proceedings proceed to their final determination so as to decide whether what was said to be the basis of the action existed at all—because the fact that a professional man made a delayed or even a wrong diagnosis was not necessarily evidence of negligence against him at all. The court decided, however, to dismiss the case without calling upon the defendants. The corporation, upon a suggestion from the judge, did not ask for the costs to which their success would ordinarily have entitled them.

Charge for Water from Surgery Tap

Is the water supplied to a surgery tap used for "domestic purposes" or otherwise? Dr. D. F. Yuille, occupying premises in Kingston upon Hull as a residence, surgery and dispensary, had hot and cold water taps in a part of his surgery separated by a partition. He used the cold water for household drinking purposes and for diluting medicines. He used the hot water for washing his hands and for cleaning and disinfecting his surgical instruments and other articles belonging to him. The Hull corporation had a scale of minimum annual charges containing an item "druggist or dispensary, 9*s*." It notified Dr. Yuille that the annual charge for his surgery or dispensary would be 15*s*., the sum being calculated at the rate applicable to a druggist or dispensary. The corporation contended that he used the water for "other than domestic purposes"—namely, for his "trade or business." The claim failed in the county court where the judge held that there was a mixed use which, viewed as a whole, was a use for domestic purposes. The judge said that the application of the water for diluting medicines gave him the greatest difficulty in the decision because it was analogous to the use by druggists and dispensaries to which the

special rate applied. He found a distinction, however, between a druggist who used water for compounding medicines sold to the public at large and a doctor who merely diluted such medicines as he supplied to his private patients.

In the Court of Appeal Lord Justice Scott observed that the authorities clearly showed that the criterion must be the purpose for which the water was used. Water used for diluting medicine necessarily constituted a domestic purpose: there could be no more domestic purpose than internal administration. If one drank a glass of water, it was a domestic purpose. The drinking of water with medicine in it—or, for the matter of that, with whisky in it—was plainly within the domestic category. As regards the use of water for washing surgical instruments, washing or cleaning was, prima facie, a domestic purpose. To keep things clean was one of the most important objects in domestic life. The Lord Justice saw no ground for saying that because the cleaned article happened to be a surgical instrument, the water ceased to be used for a domestic purpose; the nature of the use remained domestic even if the instruments were afterwards to be employed in the course of professional practice. The corporation's appeal was dismissed with costs, but leave was given to appeal to the House of Lords.

Two leading cases were cited during the arguments and judgments. In Colleys Patents Ltd. *v.* Metropolitan Water Board (1912) the water was supplied to a factory for the workmen's drinking and washing and for flushing urinals and water-closets. Lord Mersey said that the real question was whether water used for the mere personal convenience of men employed in a factory could be said to be water used for the purposes of trade carried on in the factory. In his opinion such a contention was not possible. The House of Lords held on that occasion that the supply was for domestic purposes and not for trade purposes. In Metropolitan Water Board *v.* Avery (1914) water was used in connexion with the service of luncheons in a public-house and with cooking and washing up afterwards. The judges of the divisional court, Court of Appeal and House of Lords all agreed that this was a domestic purpose. Any other decision, said Lord Dunedin, would be fragrantly in conflict with the common-sense view. To say that this was a trade purpose would commit the court to the unreasonable position that, if a retail shopkeeper used a damp sponge for cleaning dusty goods, he would be liable to pay for the water at trade rates. Dr. Yuille's defence was conducted by the London and Counties Medical Protection Society. As the case may yet go to the House of Lords comment must be restrained meanwhile. One may note nevertheless that distinguished judges have occasionally referred to the excess of subtlety which has been developed in the attempt to narrow the definition of domestic purposes and to expand the definition of trade purposes. The actual amount of water supplied from the surgery tap cannot be large and a disproportionate amount of the ratepayers' money seems to be lavished on the recovery of 15*s.* from Dr. Yuille and such other practitioners as share his potential liability.

HOSPITALS DAY.—The London hospitals will this year again hold combined flag-days. The general hospitals in inner London will collect on Tuesday, May 9; the general hospitals in outer London on Saturday, May 13; and the special hospitals on Tuesday, Oct. 10. The combined collections for 1938 amounted to over £44,000. The address of the London Hospitals Street Collections Central Committee is 36, Kingsway, W.C.2.

PARIS

(FROM OUR OWN CORRESPONDENT)

FIFTY YEARS OF THE PASTEUR INSTITUTE

THE fifty-year jubilee of the Pasteur Institute, whose celebration last autumn was postponed on account of unforeseen circumstances, took place on March 15 in the institute and in the presence of a distinguished gathering. M. Lebrun, President of the Republic, was surrounded by men whose names are household words, not only in France. The recitation by the present director of the Pasteur Institute, Dr. Louis Martin, of the exploits of the men of Pasteur's generation would have suggested the phrase "there were giants in those days," but for the presence in the flesh of so many other giants—Louis Martin himself in the first place, and the still youthful Ramon, to mention only two. M. Lebrun was accompanied by the ministers for the interior, for the colonies, and for public health. Among those present were Dr. Pasteur-Vallery-Radot (Pasteur's grandson) Dr. Adrien Loir (Pasteur's nephew), the presidents of the academies of medicine and surgery, Prof. Roussy (rector of the University of Paris), Prof. Bordet of Belgium, and delegates from various other countries, including England, Germany, Holland, Italy, and Poland. It was the doyen of the faculty of medicine of Amsterdam who, in a brief but eloquent speech, voiced the sentiments of all the foreign delegates. One of the most instructive speeches was delivered by Dr. Pasteur-Vallery-Radot, who traced the development of Pasteur Institutes in different parts of the world occupied by the French. The first of these daughter institutes was established in Indo-China under Calmette, at that time quite a young man. Since then the numerous younger daughter institutes have become famous chiefly because of the men who have been in charge of them, several of whom are still living. As one listened to these historically inspired addresses, the conviction grew that the history of microbiology is in large measure the history of Pasteur, his followers, and his institute. Before leaving the grounds of the Pasteur Institute, M. Lebrun laid a wreath on Pasteur's tomb.

OLD-AGE PENSIONS FOR DOCTORS

Superficially seductive, such a heading as Old-age Pensions for Doctors is, according to Maurice Mordagne, the mouthpiece of the Association Corporative des Étudiants en Médecine de Paris, a snare and a delusion. It will be remembered that only a few years ago a French senator, M. Pomaret, produced a legislative scheme for the compulsory retirement of all doctors at the age of 65. In the preamble to the draft of his bill he was indiscreet enough to let fall the remark that the diagnoses of a doctor of 30 are much superior to those of a doctor of 65. Cornered over this dictum, so trite to the 30-year-old, so outrageously mendacious to the 65-year-old, he was persuaded in 1937 to adopt a less harsh attitude towards elderly doctors and to consent in principle to a scheme of voluntary retirement at 65 with a pension for any doctor who had subscribed substantially throughout his medical career. It is this modified scheme which M. Mordagne castigates in a recent number of *Presse Médicale* with breezy heartiness. He pictures the emotions of a doctor forced to pay 4000 francs a year throughout his active professional life, but left free to dispense with any pension whatever when, at 65, he feels like remaining

in harness indefinitely. The 65-year-old doctor who retires on a pension of 20,000–25,000 francs would obtain this modest pension largely at the cost of his more active and hard-working contemporaries.

UNITED STATES OF AMERICA

(FROM OUR OWN CORRESPONDENTS)

A DEBATE ON MEDICAL CARE

A LARGE attendance at the New York Academy of Medicine on Feb. 27 rewarded the officers of the Medical Society of the County of New York for their efforts in arranging a symposium on the national health programme.

The first speaker, Dr. Martha M. Eliot, said that the Technical Committee on Medical Care, of which she is chairman, regarded the development of public health and preventive measures as fundamental; but at the same time no sharp line could be drawn between prevention of disease and care of the sick. The programme advocated for care of the "medically needy" aims at improving the quantity and quality of the attention received by these 40 million people. The objective of the more general programme, to include provision of medical care for normally self-supporting persons, is to relieve such persons of the risk of unpredictable costs of sickness. This may be done either by health insurance or general taxation, or both; the choice is left to each of the several states.

Dr. John P. Peters, secretary of the Committee of Physicians for the Improvement of Medical Care Inc., and professor of medicine at Yale, pointed out that certain government departments had presented reports of the distribution of medical care which were shocking, especially to members of the medical profession which has taken pride in its philanthropy. Criticisms of these data had come chiefly from persons whose personal experience has been at variance with the government's statistics. The height of absurdity had been reached by those who have damned the figures dealing with health while citing those dealing with distribution of income, culled from the same sources by the same methods. Instead of meeting the challenge squarely, said Dr. Peters, the medical organisation set out to prove the error of the national health survey by instituting an investigation of its own. This was conducted not by experts in sociological investigation but by means of questionnaires directed at random, by persons who had already declared their prejudice, to medical, welfare and philanthropic organisations. The replies gave only two types of information at the best: the number of needy patients in the community that have received medical attention and the opinion of various organisations concerning the extent of unmet need. This was as irrelevant to the problem as was a spot map showing the distribution of hospitals in the United States to the question of adequate hospitalisation.

Organised medicine, realising that it cannot provide gratuitous care to the needy, had expressed its willingness to delegate the support of this large class to the government. It denied to the government, however, the right to make any provision for the marginal class immediately above the level of indigence and specifically prohibits compulsory health insurance. Instead, it suggested extension of voluntary insurance with certain limitations, in the face of extensive experience here and abroad proving that voluntary insurance, especially when thus limited, cannot solve the problem. Already plans had been proposed by medical societies for voluntary insurance programmes, but those that pretended to offer anything approaching adequate modern medicine demanded such high premiums that they cannot serve the fraction of the population for which they are especially intended.

The defects of the British panel system, in Dr. Peters's opinion, can be attributed to the method for the distribution of medical care; there is no reason to believe that they are inherent in the system by which funds are raised.

"In our absorption in matters of finance the more important matter of assuring high-quality care seems likely to escape attention. Thus far, all plans have been predicated on the pretension of the present system of free competition, either on a cash indemnity or a free-for-service basis. Neither of these systems provides for anything but exposure of physicians to patients. Both are subject to the worst evils of the panel system, quite irrespective of the means by which they may be supported. Experience has proved that they do not particularly reward competence and decency, but afford peculiar opportunities for chicanery. They offer no incentive to the practitioner to avail himself of the assistance of specialists and consultants or to utilize all available medical facilities. They provide no machinery for the integration of the various branches of medicine; but these are the prime requisites of any system that is to supply modern medical care of high quality. All men are no longer equal in medicine and no one man can pretend to know or practice all branches of the healing art. Some means of securing coördination of medical services and more efficient utilization of time and resources is imperative."

Dr. Peters believes that nation-wide imposition of compulsory health insurance would probably be unwise at any time, and its immediate institution would almost certainly do harm. For certain areas, especially thinly populated rural regions, it may prove quite unsuitable. "Nevertheless, it would be most unfortunate to exclude it entirely from consideration, as the American Medical Association has demanded." He closed with a reminder that any programme for the expansion of medical care must include provisions for education and research.

Dr. Samuel J. Kopetzky chose for his subject the "intangible effects of compulsory health insurance in medical practice." He spoke, he said, from no love of controversy but to help stop the progressive deterioration of our doctors. If the burden of caring for the indigent were lifted from the doctor's shoulders he would gladly scale his fees to the financial ability of the wage-earner. Dr. Kopetzky also opposed health insurance because he has a great love for the career of a doctor. He who enters a sick-room must be accompanied by "confidence." Once the devastating taxes of health insurance were imposed the government would do nothing to improve the quality of medical care. He drew attention to the many forums which our scientific societies and our academies of medicine provide, crowded even during the depression by eager physician-students voluntarily endeavouring to better themselves. "Show me," said Dr. Kopetzky, "anything like it in any country in the world where compulsory health insurance is in force. We are told that scientific medicine has 'crossed the Atlantic' and its headquarters are now in America. How much of this changed focus in scientific medicine do we owe to the regimented deterioration abroad, and to the lack of leisure,

initiative and ambition of panel medical practice there?" There is, he pointed out, no incentive to become a better doctor, if income from practice is fixed by the insurance capitation fee. A level of mediocrity is created, while dull routinised medical practice ensues. Health insurance does not enhance preventive medicine; it creates a medico-socio-political machine. (Probably one must be American to realise what a horrible thing that is.)

Dr. Frederic E. Elliott advocated "non-profit medical expense indemnity associations." Compulsory health insurance, socialised medicine, consumers' coöperatives, group health associations were, he said, all the same thing though the stage trappings are a little different. Assistance which, on the other hand, deals exclusively with the financial aspect of medical service has many fundamental advantages. The assisting agency stands behind the patient and not between him and the doctor. It retains the direct responsibility of one doctor to one patient. It preserves freedom of choice by the patient. Perpetuation of individual enterprise and freedom in the practice of medicine are, Dr. Elliott said, along with freedom of the press, freedom of religion and independence of the judiciary, fundamental to the democracy of life and the happiness and well-being of the American people.

THE NATIONAL HEALTH BILL

On Feb. 28 Senator Wagner introduced a bill which amends the Social Security Act and is to be cited as the National Health Act of 1939. This bill fulfils expectations in embodying the main recommendations of the Technical Committee on Medical Care. The Social Security Act is amended so as to increase the federal subsidies available for work among mothers and children, to add to the provisions for the care of crippled children and provisions for medical care of children, and to provide additional funds for public-health work and for training personnel. Additional titles provide for grants to states for hospitals and public-health centres, for medical care "especially in rural areas and among individuals suffering from severe economic distress," and for temporary disability compensation when the disability results from sickness. In the states the act will be largely administered or supervised by the state health department, but the state health officer will apparently have to meet the requirements of three separate federal departments at Washington and at least five separate federal advisory boards. If standards for the qualifications of personnel and the quality of medical care provided are set up by these boards, he will have to deal with a maze of regulations and standards compared with which his present troubles will be trifling. However, from the wording of the bill, it is not at all clear that the federal advisory board will have any function except to advise the administering agency how to maintain the merit system. The wording of the bill seems to imply that the qualifications and the standards will be fixed by state administering agencies who will be advised by state advisory boards. If so the federal advisory boards will have no important function and the standards of service will be as low as each of the several state agencies may prescribe.

The amount of subsidy which each state will receive is governed by the population, the number of needy persons, the per-capita income of its residents, and its special health problems.

Thus far comment in the lay papers has been scarce. This may be because the administrative set-up is so complicated that lay writers are not able to understand it; or it may be that editors are waiting until the bill is debated on the floor of the senate.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE IRISH HOSPITALS COMMISSION

THE third general report of the Irish Hospitals Commission, covering the activities of 1937, was issued last week. Up to the end of 1937 the total proceeds of the sweepstakes available for hospitals amounted to £11,576,849. Of this sum £2,762,501 was distributed directly to participating hospitals and £1,159,184 to the Minister for Local Government and Public Health for the use of hospitals under local authorities. The sum of £7,704,700 is in the custody of the board of trustees.

The report analyses the hospital bed accommodation of the country as a whole. It is stated that it is generally accepted that there should be 5 hospital beds per 1000 of the population for the accommodation of general medical, surgical, and obstetric cases. It is suggested that in a country like Ireland, where there is a large rural and a small industrial population, so high a ratio may not be required. The actual ratio is 3·2 beds per 1000 of the population. The proportion in Dublin city and county is 6·2 per 1000, but the report hardly gives adequate weight to the fact that the hospitals in Dublin and Cork serve the greater part of the country. For instance, 27·7 per cent. of the patients treated in Dublin hospitals in 1936 came from other counties.

Severe strictures are made on the administration of the voluntary hospitals and on their alleged lack of adequate control of expenditure. The following passages summarise the commission's contentions:—

"It is apparent that the voluntary hospitals are becoming each year more dependent on the proceeds of sweepstakes. . . . The yearly accounts of the hospitals indicate . . . that in many of the hospitals there is a marked tendency to relax that ever-watchful supervision of spending which is so essential for the economic administration of such institutions.

"It was to be expected that maintenance costs would rise when the hospitals were to a large extent relieved, by the phenomenal success of the sweepstakes, of the fears and uncertainties due to the precariousness of their financial position. . . . It is when expenditure continues to ascend at what can only be termed an alarming rate that serious misgivings arise as to the justification for the increases. The Commission has frequently exhorted the governing bodies of the hospitals to exercise a rigid and efficient internal control of expenditure, so that, when and where increases occur, commensurately improved services may accrue.

"It does not appear to the Commission that there has been any marked improvement in hospital administrative methods in the matter of supervision of expenditure.

"The Commission has arrived at the conclusion that so long as the hospitals foresee that their maintenance deficits will be refunded out of the Hospital Trust Fund, and that there is not any immediate possibility of their having to finance such losses of themselves, thus long will expenditure continue on the upgrade."

The report suggests "that a limit may have to be put to hospital expenditure by some other means than dependency on the economic supervision within

each hospital, if the latter cannot give the required results." Unless a "business-like and conscientious control of expenditure" be established by the hospitals themselves, "an alternative method of dealing with the deficit question will have to be considered." In reply it has been pointed out that the commission has underrated the amount of leeway which had to be made up by most of the voluntary hospitals at the time the sweepstakes were established and the steadily increasing cost of treatment by modern methods. No evidence has been produced of a greater proportional increase of expenditure in the voluntary hospitals which receive grants from the sweepstakes funds than in those not receiving grants or than in comparable hospitals in Great Britain or Northern Ireland.

Some of the phrases used in the report are puzzling, such as the reference to the possibility of the hospitals "having to finance such losses *of themselves*," ignoring the fact that the hospitals have little resources outside what they have got or may get from the sweepstakes funds. It is not likely that the commission wishes the hospitals to be carried on as business concerns, but some of the expressions used convey that suggestion. Moreover the general tone of many paragraphs conveys the notion that the sweepstakes funds are not the property of the hospitals but of the Minister or of some other authority, whereas the funds have been collected for the improvement and maintenance of the voluntary hospitals and are held in trust for the voluntary hospitals. The Minister has only to apportion the funds between several voluntary hospitals. Many of those interested in the voluntary hospitals read into the report a tendency to bring the hospitals under effective state control, and they are inclined to resent the lecturing tone apparent in such paragraphs as have been quoted above.

The commission's opposition to the proposal to build a fever hospital for Dublin with 600 beds instead of the 500 in the original proposal is based on the view that it is cheaper to prevent contagion than to build and equip hospitals to treat fevers, and that, if adequate prevention of diphtheria were practised, the smaller number of beds would be sufficient. The report gives a long statement of the commission's reasons for declining to recommend the proposals made for the creation of an orthopædic hospital of 150 beds in the neighbourhood of Dublin. The commission's alternative is that, when the Dublin hospitals have been enlarged and improved, they will possess efficient orthopædic sections. On the other hand, the commission's plan for dealing with chronic rheumatism is to concentrate the work in one central institute. Many will fail to see why centralisation is opposed in one case and approved in the other. Many will think too that the establishment of an elaborate treatment centre for chronic rheumatism is premature until much more research has been made into the causation and pathology of that disease.

The commission justifiably emphasises the discrepancy between the number of available and of occupied beds in the several hospitals in certain months of the year and emphasis is also properly laid on improvement of hospital records.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM A PART-TIME PROFESSOR

IV

THE assizes are now sitting in this city and the newspaper reports serve to remind me that few spectacles are more calculated to bring the dignity, honesty and impartiality of our profession into disrepute than the expert evidence given by doctors in courts of law. In one case the witnesses on one side asserted that the victim was permanently and totally disabled, whilst those on the other side avowed that "if only the patient would pull himself together he would be able to return to his former occupation." It is clear that these two views are wholly irreconcilable, and it must be an unenviable task for both judge and jury to decide where lies the truth in these conflicting statements. The public allege that doctors called as witnesses for one particular side are obliging enough to cast their evidence in the appropriate mould. Moreover it is suggested that wealthy litigants bring witnesses of considerable renown into court who by the sheer weight of their reputation overwhelm the medical evidence on the poor litigant's side, and a miscarriage of justice follows. I think it true that judges tend in some degree to discount the spectacular evidence brought in these circumstances, but even this is unfair, for it might well be the doctor of greatest renown who gives the fairest and most valuable opinion.

It should not be beyond the wit of man to devise a means whereby the ends of justice could be more certainly attained. The attempt made to secure this by having, in certain cases, a medical assessor sitting with the judge is helpful; but the assessor, too, has to listen to the conflicting evidence of medical witnesses, and his task is a difficult one, especially in disabilities of which he has no first-hand experience. I think the basis on which a scheme might be devised would be to have at each assize a panel of three eminent doctors, with power to coöpt specialists where the circumstances demand them. This panel would examine the victims of accidents and report to the judge, answering, if they are able, such questions as—from what is the claimant suffering? is the disability permanent or temporary? if the latter, what is its probable duration? is it partial or complete? could the disability have been produced by the alleged accident? has the onset of an illness been precipitated by the accident or its progress accelerated thereby? and so forth. The panel would intimate frankly to the judge that in certain cases the answer is, "we do not know," or "we might be able to answer this question in a year's time." These would provide the basis for legal argument and judgment. The panel could be appointed by an approved body—e.g., the Home Office. The principle aimed at is the freeing of expert evidence from the taints of bias and omniscience. One result of accepting this scheme would be a loss of income both to doctors and barristers, but this is of less importance than a risk of loss of respect for professional integrity.

* * *

The element of chance in shaping the consultant's destiny is, I fear, insufficiently appreciated. We are

told year by year in the opening addresses at our medical schools that honesty, knowledge, wisdom, self-sacrifice, indeed all the higher moral qualities, are necessary attributes of the successful physician. Experience shows, however, that these are born to blush unseen, and waste their sweetness on the desert air, unless that chance occurs which opens the gateway to success. There is, for example, the vacancy on the hospital staff which occurs at the most opportune moment. But it is in practice that the lottery is especially marked. Almost every consultant can recall one particular case which started him on the road of success after long tarrying by the wayside. One of my friends who early achieved great fame as a physician frequently recalls that it was a rectal examination which established his reputation. The parents of a girl, alleged to be suffering from typhoid fever and pronounced gravely ill by a senior consultant, asked for a second consultant's opinion. My friend was called in. He listened carefully to the history and suspected an appendix abscess. Abdominal examination was negative but he recalled the maxim, "if you don't put your finger in it, you put your foot in it." He confirmed his suspicion, for rectal examination revealed a pelvic abscess and he advised immediate drainage. My friend insists that the patient's rapid recovery contributed less to his suddenly increased practice than the fact that the girl happened to be the only daughter of the captain of a famous golf club.

* * *

In the psychology of humour there is a phenomenon which would repay careful analysis. Not infrequently a man who has reached the highest rung of his professional ladder refers to himself with that mock solemnity which always raises a laugh as "a most distinguished ornament of his profession." We heard an example on the occasion of the presentation of his portrait to the president of the Royal College of Physicians. Lord Macmillan, who presided, spoke, in the course of his sincere and beautifully phrased tribute to Dr. Hutchison, of the attraction of the Edinburgh medical school in the early 'nineties, admitting that it very nearly lured him, in which case "the law would have been deprived of one of its most distinguished judges." The spectacle of a distinguished judge (of exceptionally modest bearing), frankly avowing his worth might be regarded as adding weight to the view that the basis of all humour is incongruity.

Recently a young barrister, proposing a vote of thanks to a well-known physician for his address to a luncheon club, spoke in glowing terms of the speaker's persuasive eloquence and added, "Had our distinguished guest chosen the law as his profession there would have been many more men alive than there are today." The applause, quite free from irony, with which these words were greeted suggested that few had detected its *double entendre*.

* * *

Would it not be well for editors to indicate why they reject papers submitted to them for publication? A young and more than usually able research worker had recently a manuscript returned from the editorial committee of a quarterly journal with a note informing him simply that "the editors regret they are unable to accept your article for publication." Unversed in the ways of editors he was profoundly distressed and asked me if I would read his paper and tell him why it had been rejected. The explanation was immediately apparent, for though the paper was well written and embodied a real contribution to knowledge there were accompanying it six coloured plates! I advised him to write to the editor offering to pay for the reproduction of the coloured plates. This he did and was asked to return the paper to the editor by the next post for publication in the next number! Much heartache might have been saved by a word of explanation.

Those who have had papers rejected because their contents are out of accord with accepted knowledge will find solace in C. D. Broad's preface to "The Mind and its Place in Nature" (1925). There he suggests that he will doubtless be blamed by certain scientists for considering seriously the alleged facts investigated by Psychical Researchers. But he says: "I am wholly impenitent about this. The scientists in question seem to me to confuse the Author of Nature with the Editor of *Nature*; or at any rate to suppose that there can be no productions of the former which would not be accepted for publication by the latter. And I see no reason to believe this."

* * *

University handbooks are rarely the repositories of wit, at any rate of conscious wit. One of the few examples I have met in my enforced reading of them is recalled by the fact that the smoke-room of my club has just been redecorated with a somewhat ornate wallpaper. Commenting on the smallness and decoration of the bedrooms in Oxford colleges, the handbook to the University of Oxford states: "... builders of old evidently believed that in a place to which one resorts in order to become unconscious of one's surroundings, the surroundings do not greatly matter; and the occupant, after one glance at the floral luxuriance of the wall-paper, will probably appreciate the advantages of unconsciousness."

THE LANCET 100 YEARS AGO

March 23, 1839, *p.* 3.

From a lecture by Dr. A. T. Thomson at University College Hospital.

... If we reflect (said he) how long a period has elapsed since medicinal agents had been applied to, or rubbed upon, the entire skin, and how much benefit had been derived from counter-irritants, it was remarkable that no advantage had been taken of the skin, as an inlet to medicinal substances capable of acting generally upon the system, until the year 1823. MM. Lembert and Lessieur, at that time, suggested what was termed the *endermic method*. They had some followers among continental practitioners, but few in this country had ventured to administer medicines in this way; and it was not too broad an assertion to affirm that it had been most unjustifiably neglected. . . . The most common method of raising the cuticle was the application of a blister; and since the introduction of the acetum cantharidis, we possessed a very rapid and efficient means of blistering. . . .

One advantage of the endermic method over the internal administration of powerful narcotics was that of obtaining the full influence of the narcotic without any chemical change being produced upon it, such as must, necessarily, often occur when it was taken into the stomach: another was that the digestive function was left undisturbed: and a third was the power which we possessed of restraining the too great activity of the narcotic by the application of an exhausted cupping-glass over the part to which it had been applied. . . . The time required for the imbibition of a narcotic thus applied, in order to reach the capillaries, and to enter the circulation, was stated by Müller, in his "Elements of Physiology," to be less than a second; . . . In some of the instances in which finely-powdered hydrochlorate of morphia was sprinkled over a blistered surface, the influence of the narcotic was felt in the head in less than a minute.

THE AIR-RAID

A series of articles on medical organisation and surgical practice in air attack by
P. H. MITCHINER, C.B.E., T.D., F.R.C.S., *and* E. M. COWELL, D.S.O., T.D., F.R.C.S.

XII—NURSING ORGANISATION AND NURSING OF CASUALTIES

FOR the same reason as the medical profession it has become necessary to organise the nursing profession. To staff the vast hospital expansion that may be required to deal with air-raid casualties, many ex-nurses, at present not active in their profession, and large numbers of trained members of the voluntary aid societies will be necessary in addition to the existing nursing staff. This large organisation will probably be controlled by the Ministry of Health.

Personnel of Dressing-stations

Large dressing-stations should be organised to hold 100 stretcher and 100 sitting cases. The staff required is given in table I; it will be observed that a sister-in-charge and three nurses are recommended. The personnel will work in shifts of eight or twelve hours. Some of the volunteers will be able to be on duty for only part of a shift. If gas cases arrive in any numbers there will probably be fewer wounded, and the personnel must be rearranged accordingly.

The sister-in-charge will work with the senior medical officer and give her orders to the duty nursing officers. The duty officers will be commandants or other officers of the Order of St. John or of the British Red Cross Society, one of either sex. These officers will know their personnel and appoint leaders in each department. The third duty officer performs the quartermaster's or steward's duties.

In addition to the staff as scheduled, helpers will be required to work in the canteen, in the reception-room, and to look after the feeding of the personnel. Extra stretcher-bearers will be supplied from attached first-aid parties. The men auxiliaries attached to the office staff will act as runners. Extra police will be required to direct incoming ambulances and guide the patients.

When arrangements are working smoothly, the dressing-station will be cleared rapidly. If, however, there are so many casualties that the neighbouring hospitals become full at once, the dressing-stations must be prepared to hold their cases for 4–6 hours or even longer. In some circumstances it may even become necessary to convert the dressing-station into a temporary casualty hospital.

Personnel of Casualty Hospitals

The hospitals set apart to deal with large numbers of wounded ("mass surgery centres") will require extra nurses and careful internal organisation. The executive staff will consist of (1) a senior medical officer with his deputy and the house governor; (2) a matron with her deputy; and (3) duty officers from the voluntary aid societies. These officers hand their details to the matron for work in the various departments. Table II is given as a guide to the posting of the staff. An allowance should be made for two shifts in the twenty-four hours. It may be necessary to change over the details according to circumstances. The exact proportion of male and female casualties is an unknown quantity, and the question of gas will not be settled until the actual raid. A responsible sister will be in charge of each ward, and her name should be marked up at the door for the information of the new and oft-changing voluntary personnel.

Nursing of Air-raid Casualties

Members of the nursing profession who may be engaged in nursing air-raid casualties should, in addition to an acquaintance with "gas," possess an up-to-date knowledge of air-raid surgery.

WORK IN SPECIAL DEPARTMENTS

In the *reception-room* 250–700 units of antitetanic serum will be given to all wounded that have not previously received an injection. There is, however, the danger of anaphylaxis, and, if there is a history of a recent previous dose, the serum must be given slowly with adrenaline at hand if untoward symptoms arise.

TABLE I—PERSONNEL OF DRESSING-STATION FOR 100 LYING AND 100 SITTING CASES

Department	Trained nurses (S.R.)	Duty officers	Clerks	Nursing orderlies		Auxiliaries		Cooks	Total voluntary personnel
				Men	Women	Men	Women		
Stretcher dump	..	..	..	..	..	1	..	..	1
Office	Sister i/c	2	2	..	..	3	2	..	9
Reception — Wounded	..	..	2	1	4	4	2	..	13
Reception — Gas	..	..	1	1	1	1	1	..	5
Treatment	1	..	..	2	5	..	1	..	8
Evacuation — Lying	..	..	..	6	6	6	6	..	24
Evacuation — Sitting	..	..	..	2	2	2	2	..	8
Resuscitation	1	..	..	..	2	..	2	..	4
Theatre	1	..	..	1	1	..	1	..	3
Q.M. department	..	1	1	..	..	1	2	..	5
„ kitchen	..	..	..	..	..	..	5	2	7
Mortuary	..	..	..	1	..	2	..	..	3
—	4	3	6	14	21	20	24	2	90

Note.—The lying cases will probably outnumber the sitting. Of the latter 20 per cent. will become stretcher cases after admission. Two to four police will be required for duty at the entrance, to control crowds and to direct the ambulances and stretcher-bearers.

TABLE II—PERSONNEL OF A CASUALTY HOSPITAL WITH 200 BEDS

Department	Accommodation	S.R. nurses	Duty officers	Clerks	Dispensers	Nursing orderlies		Auxiliaries		Cooks	Total voluntary personnel
						Men	Women	Men	Women		
Stretcher dump	..	..	..	..	..	..	..	1	..	..	1
Office	..	Matron	2	2	..	..	..	2	6	..	12
Reception — Wounded	40 L.	1	..	4	..	1	2	4	4	..	15
Reception — Wounded	20 S.	..	..	..	..	..	1	..	1	..	2
Reception — Gas	10 S.	..	..	..	..	3	3	..	..	..	6
Treatment	8 L.	1	..	..	..	..	..	..	..	..	..
Treatment	20 S.	..	..	..	..	1	1	..	1	..	3
Preoperation	30 L.	2	..	..	..	1	3	1	3	..	8
Resuscitation	30 L.	4	..	..	..	2	5	1	2	..	10
Theatre (6 teams)	12 tables	7	1	2	..	6	6	12	6	..	33
Plaster team	6 tables	..	..	..	..	6	..	..	..	..	6
Evacuation — S.	20	..	..	..	..	..	..	1	1	..	2
Evacuation — L. (men)	40	1	..	..	..	2	2	1	2	..	7
Evacuation — L. (women)	40	1	..	..	..	..	4	..	3	..	7
Serious surgical — Men	15	3	..	..	..	1	2	..	..	..	3
Serious surgical — Women	15	3	..	..	..	..	3	..	..	..	3
Gas	10	1	..	..	..	1	2	..	1	..	4
Q.M. department	..	..	1	1	1	..	..	1	2	..	6
„ kitchen	..	..	..	..	..	..	..	..	4	3	7
Personnel quarters	..	..	..	..	..	..	..	1	2	..	3
Mortuary	..	..	..	..	..	1	..	1	..	..	2
		25	4	9	1	25	34	26	38	3	140

Note.—The voluntary personnel is supernumerary to the existing nursing and domestic staff of the hospital. Police will be required for duty at the hospital entrances. L. and S.=lying and sitting.

In the *resuscitation ward* a great deal can be done for the apparently moribund. (For a description of wound shock see *Lancet*, Jan. 28, p. 228.) The nurse should be familiar with the various methods of *réchauffement* or warming the patient. Hot bottles should be placed near the large blood-vessels—i.e., over the groins and *not* at the feet. Electric cradles, hot-air stoves, and electric blankets all help. If the electric supply is cut off, a stretcher placed on trestles, with a shielded primus or beatrice stove underneath and the sides enclosed by hanging blankets, makes an excellent warming apparatus (fig. 1). Fluids must be given in large amounts, and the nurse should be able to instruct and supervise the voluntary personnel in giving saline by the rectum. Blood-transfusion is given in this department, and the senior nurse should be able to introduce the needle into the vein and should understand the technique of the continuous-drip method. Care should be taken in giving morphine hypodermically. It is better to give small repeated doses than one large dose. The dose should be indicated on the patient's card or marked on his forehead, together with the time of its administration.

THEATRE WORK

A hospital chosen for mass surgery will require six to eight surgical teams working simultaneously. Arrangements should be made to train a sufficient number of sisters and nurses in theatre duties, so that they are ready when their services are required. The theatre should be large enough to hold these teams—12–16 "twin tables"—and will be adapted from a ward or other building set aside for the purpose. One sister or nurse is detailed for each team, and a sister-in-charge should be appointed for the theatre block, to supervise the provision and sterilising of dressings, instruments, gloves, overalls, and the supply of anæsthetics. A duty officer will supervise the stretcher-bearers and see that the patients are brought in from the preoperation room without delay. Special clerks will be on duty to make notes and complete the necessary records.

EVACUATION WARDS

The majority of the patients will be moved on at an early date to another hospital and will spend their time in the evacuation wards on their stretchers and not in beds. The new all-metal stretcher (fig. 2) will be in common use, and the nurse must know how to keep the patient warm and comfortable. The stretcher either rests on the floor on its runners or is supported on trestles 18 in. high. It is important to provide as much protection as possible to the patient's back. Newspapers are good non-conductors and make a useful mattress. The blankets are folded as in the Thomas drill—by this method the effect of four blankets can be obtained when only three are actually used.

WORK IN THE SERIOUS SURGICAL WARDS

Air-raid wounds are all infected, and successful results depend on early operation. When primary excision of wounds is carried out, the wound may be sutured at once, but is generally left a few days for

secondary suture. In either case the dressing is left alone and a great deal of labour is saved. Careful watching is required in looking for secondary hæmorrhage, the onset of sepsis, or perhaps gas-gangrene or tetanus. The Carrel-Dakin method of wound treatment was used in the Great War but is unlikely to be used today. Much time was saved when all the tubes were connected up by the appropriate fittings, so that the irrigating fluid was injected into one main tube only, whence it was distributed to the rest, without moving or disturbing the patient. A self-regulating reservoir was fitted in some wards which mechanically treated several patients simultaneously. The treatment of burns with tannic acid has already been mentioned and may become very important in air-raid nursing. If the plaster method, now being carried out in Spain and mentioned in a previous article, is used, all wounds of limbs will come back from the theatre completely covered in plaster-of-paris. The nurse should be familiar with the various methods of suspending limbs and know the different ways of making the patient comfortable. The plaster may soon become blood-stained and soaked with exuding fluids, but the patients' temperature comes down rapidly, and they do well. Watch should be kept for a rising pulse, a dirty tongue, and other signs of toxæmia. Such untoward symptoms will be immediately reported, and the plaster may have to be removed. Otherwise the patients are left alone, and the plaster is only changed once a fortnight.

FIG. 1—*Réchauffement* for wound-shock: stretcher on stretcher-table with hanging blankets and heater.

Abdominal wounds.—When the patient comes to the ward from the theatre he should be put into the position of the greatest comfort, after the initial shock has passed off. A strict Fowler's position may be asked for by the surgeon, but often it is enough to raise the head of the bed on blocks. The administration of glucose-saline per rectum is generally useful, the quantity retained by the patient often varying directly with the skill of the nurse. It is usually safe to begin *small* mouth feeds of albumin-water, sterile water, or glucose-lemonade as soon as the patient recovers from the anæsthetic, even when stomach or bowel has been sutured. Oral asepsis should always be aimed at. The important complications to look for are signs of peritoneal irritation, vomiting, and ileus. Internal hæmorrhage should not occur after operation, and shock will have been treated elsewhere. A knowledge of the technique of continuous gastric siphonage and intravenous drip saline or blood-transfusion may be instrumental in saving many lives. The doctors will be so busy that they may depute this treatment to the sisters. After twelve hours regular liquid feeds may be started. Soft food may be given after the fourth day, and if all is well the patient may be sent on after the tenth day.

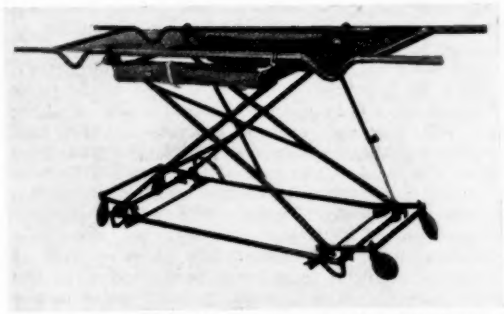


FIG. 2—All-metal stretcher on Tor stretcher-table for use as dressing or operating table.

Chest wounds.—The temperature of the ward should be kept at about 60° F., and draughts must be avoided. The posture of the patient is important; he is usually most comfortable if propped up. In many cases an oxygen tent (fig. 3) is most helpful, and the open-top pattern is recommended. The material used in its construction can be fireproofed, the open top allows of ready access in feeding, and the rest of the patient can be attended to without disturbing the concentration of oxygen.

The chief complications to look for are surgical emphysema, pneumonia, or bronchitis. A steam tent may relieve bronchitis. The onset of infection in a hæmothorax is suggested by the aspect of the patient and a rise in pulse-rate and temperature. Pain and cough may be checked by heroin or morphine. These remarks apply both to patients who have been operated on and to those wounded who are treated medically. It is important to avoid tight bandages after operation.

FIG. 3—Oxygen tent.
(Tor Equipment Co., Croydon)

Cerebral and spinal cases call for the most careful nursing. Apart from the well-known difficulties of feeding, looking after the incontinence, and prevention of bed-sores, the question of posture is important. If the brain is injured and there is a gap in the vault of the skull, it is important to avoid doing anything that will increase cerebral congestion. The best position for these patients is probably attained by raising the head of the bed on blocks. Restlessness or delirium must be combated with sedatives and, at times, with a strong sheet. The onset of cerebral compression in a patient who has not undergone operation must be immediately reported and, if necessary, artificial respiration performed until the doctor arrives. A soft running rapid pulse nearly always means a fatal termination. Careful watch must always be kept on the bladder to avoid over-distension. The use of the triangular bandage to retain dressings in operated head cases is strongly recommended. Spinal cases are perhaps even more difficult then head cases. If the patient can be nursed on a bed with divided mattresses, much time and trouble are saved. The retention of urine in these cases will probably be treated by the insertion of a self-retaining catheter in the bladder after suprapubic puncture.

Wounds of the face and jaws.—Every care should be taken to maintain asepsis of the oral and nasal cavities. Sprays of weak eusol or some other mild antiseptic should be provided and the patient encouraged to use them himself. Difficulty in breathing may suddenly arise, and instruments for tracheotomy or laryngotomy should be at hand, though generally all that is needed is to pull the tongue forwards. Many surgeons leave a long suture, passed through the tongue, to enable this to be done readily by the nurse.

CONCLUDING REMARKS

Nursing under air-raid conditions calls for the highest qualities of well-sustained morale, good discipline, and earnest devotion. The controlling authorities will try to arrange that the hospitals set apart for air-raid surgery will be situated as far as possible from the zone of greatest danger. It will not be possible, however, to eliminate all risk entirely. Some bombs do not explode, and, even if they do, it is impossible for many hospitals to be hit at the same time. The slogan should be "Carry on and hope for the best." However anxious the nurse may be, she must never show her feelings but remain smiling and do all in her power to comfort and cheer her patients. In Spain it was a point of honour that no-one showed any anxiety, and everybody in the hospital went about as though nothing unusual were happening.

PUBLIC HEALTH

End of "Puerperal Fever" Notification

IN 1926 the term "puerperal pyrexia" was introduced by the Ministry of Health to oust "puerperal fever." This, however, could not be done immediately without special legislation, because "puerperal fever" was already included among the diseases notifiable under the Infectious Diseases (Notifications) Acts, 1889–1899. The passing into law of the Public Health Act, 1936, provided the opportunity of omitting "puerperal fever" from the list of diseases notifiable by statute as distinct from those notifiable under regulations made by the Minister. The effect is that, except in London, to which the Public Health Act, 1936, does not apply, "puerperal fever" is no longer notifiable, but "puerperal pyrexia" remains notifiable under the Public Health (Notification of Puerperal Fever and Puerperal Pyrexia) Regulations, 1926. To clear up confusion the Minister has now issued new regulations to take the place of those of 1926 (London still being excepted). They are called the Puerperal Pyrexia Regulations, 1939, and will come into force on April 1. "Puerperal pyrexia," as now to be notified, will mean "any febrile condition occurring in a woman within 21 days after childbirth or miscarriage in which a temperature of 100·4° Fahrenheit (38° Centigrade) or more has been sustained during a period of 24 hours or has recurred during that period."

Industrial Protection of Eyes

To help employers bound by statutory regulations to provide protection for their employees' eyes a leaflet entitled "Protection Against Eye Accidents" has been issued, in which it is pointed out that in about 10 per cent. of the blind in this country the blindness is due to industrial injuries, and that over 7600 eye accidents were officially reported in 1936 under the Factory Acts. Since reportable accidents are those that have caused disablement for more than three days, the total of all industrial accidents to eyes is obviously much greater, perhaps 100,000 yearly. The main causes of such accidents are dust and small flying particles (as in metal-grinding and sand-blasting); larger flying objects (as in turning and in cutting rivets); splashing of molten metal and corrosive liquid (as in casting and in handling chemicals); and intense glare (as in oxyacetylene welding). Protective appliances are classified into fixed screens and portable screens, the latter including helmets, face-masks, visors, veils, and goggles. Screens may contain windows of special optical glass to intercept harmful radiations and to reduce glare. One ingenious form, used in the inspection of glass furnaces, is held in position by biting with the teeth on a wooden peg. When not in use it hangs from the workman's neck. Samples of many of these protective devices can be seen at the Home Office Industrial Museum, Horseferry Road, S.W.1. The museum is open from 10 A.M. to 4 P.M. on week-days, admission being free.

Municipal Aid for a Voluntary Hospital

The Prince of Wales's Hospital, Plymouth, finding itself in difficult financial circumstances, lately appealed to the Plymouth city council for assistance. We are informed that the council has decided to make a grant of £3500 to the hospital for the year ending March 31, 1939, upon certain conditions, which include the following: (1) The question of the necessity for, and the amount of such financial assistance shall be subject to annual revision by the council. (2) The hospital board of management shall not, without prior approval of the council, increase or diminish accommodation or facilities provided for patients or staff so as to affect the financial position of the hospital. (3) The representation of the council on the board of management of the hospital shall be three members of the council and the medical officer of health, the latter in an advisory capacity. (4) The accounts of the hospital shall be submitted to the council in respect of each year during which a grant is made.

HOSPITALS IN EMERGENCY

THE SCHEME FOR LONDON

PLANS made for the care of air-raid casualties in large cities were outlined by the Ministry of Health at the end of last month.[1] In London and other big centres of population the casualty hospitals in the centre are to be affiliated with each other and with casualty hospitals in outer areas to which the wounded can be rapidly evacuated.

Further details for London have now been issued, subject to modification, and the accompanying map shows approximately how affiliation is arranged in ten sectors radiating from the centre. Each of these sectors contains voluntary and municipal hospitals of widely differing types, including the great teaching hospitals, local-authority institutions, mental hospitals, specialised hospitals, and cottage hospitals. Some of these institutions—e.g., mental hospitals—will be converted from their present use to the care of casualties, and for this purpose will at once be cleared of their normal patients and "upgraded" to the status of casualty hospitals by the installation of additional apparatus and personnel. Other hospitals, which could not be so upgraded, will be kept for convalescent cases, chronic cases and those needing inpatient treatment but no special facilities.

It is proposed that the casualty hospitals near the centre of each sector should be used as far as possible for immediate treatment only, and that the injured should be transferred at the earliest opportunity from the centre to affiliated casualty base hospitals in the outer areas. Thus in sector 7, St. George's Hospital is affiliated to (among others) an advance-base hospital at Staines in Middlesex (the public-assistance institution) and a base hospital at Basingstoke in Hampshire (the Park Prewett Mental Hospital). Owing to the unpredictable nature of air attack, however, it might on occasion be necessary to give casualties initial treatment at an outlying hospital, and then to redistribute them among hospitals nearer the centre. Elasticity and freedom of interchange between hospitals are the essence of the scheme, which is designed to distribute the weight of casualties falling suddenly at any given point. It is intended that, as soon as an emergency threatens, equipment and staff will be redistributed among members of the group so as to use material and skill to the best advantage.

The following lists show the principal casualty hospitals grouped according to sectors. Many other institutions in each area will be used for minor casualties, convalescence, infectious diseases, and other purposes. The name given above each list is that of the "group officer" appointed to represent the group. The abbreviations used are: H.=Hospital. P.A.I.=Public Assistance Institution. I.D.=Institution for Defectives. L.C.C.=London County Council.

1. Emergency Hospital Organisation. H.M. Stationery Office. 6*d*. See *Lancet*, March 4, 1939, p. 523, and March 18, p. 650.

SECTOR 1 (ESSEX)

(Mr. Russell Howard)

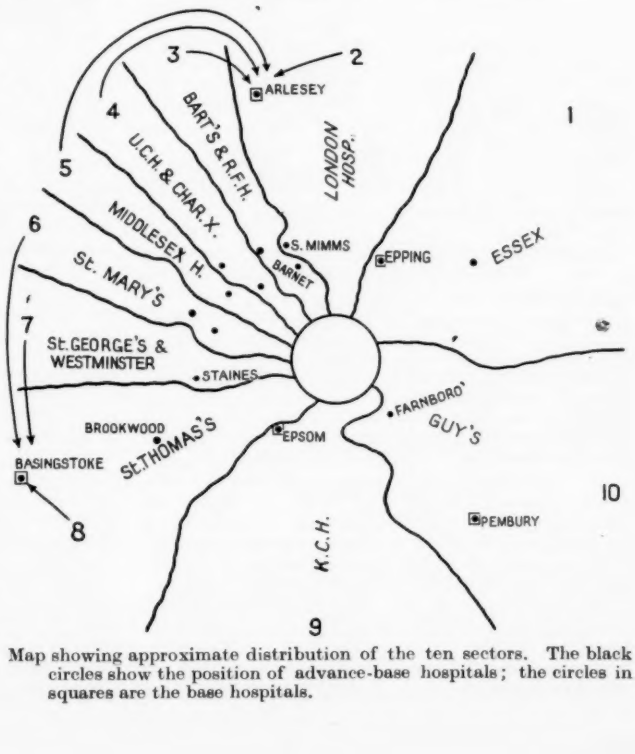
Australasian (Barnardo's) H., Barkingside.
Connaught H., Walthamstow.
East Ham Memorial H.
King George H., Ilford.
Oldchurch County H., Romford.
Queen Mary's H., Stratford.
St. Mary's H., Plaistow.
Seamen's H., Tilbury.
Whipps Cross H., Walthamstow.
Woodford Jubilee H.
Barking H.
Highwood H. (L.C.C.), Brentwood.
Albert Dock H.
Aldersbrook Children's Home, Snaresbrook.
Sutton's Institution (auxiliary to Oldchurch), Hornchurch.
West Ham H., Harold Wood.
St. John's P.A.I., Chelmsford.
Colchester P.A.I.
Black Notley Sanatorium, Braintree.
Essex County H., Colchester.
Chelmsford and Essex H.
Southend Municipal H., Rochford.
Southend District General H.
Brentwood Mental H.
Goodmayes Mental H.
Runwell Mental H.
Claybury Mental H. (L.C.C.).
Severalls Mental H.

Advanced bases.—Epping P.A.I.; St. Andrew's P.A.I., Billericay.

SECTOR 2 (LONDON HOSPITAL)

(Mr. Russell Howard)

London H.
German H.
Metropolitan H.
Bethnal Green H. (L.C.C.).
London Chest H., Victoria Park.
St. Leonard's H. (L.C.C.).
St. Peter's H. (L.C.C.).
Mile End H. (L.C.C.).
St. Andrew's H. (L.C.C.).
London Jewish H.
Poplar H.
Princess Elizabeth of York H., Shadwell.
St. George-in-the-East H. (L.C.C.).
Mildmay Mission H., Bethnal Green.
Queen's H. for Children, Hackney Road.



Map showing approximate distribution of the ten sectors. The black circles show the position of advance-base hospitals; the circles in squares are the base hospitals.

SECTOR 2 (*continued*)

North Eastern H. (L.C.C.).
Eastern H. (L.C.C.).
Hackney H. (L.C.C.).
Prince of Wales H., Tottenham.
Enfield War Memorial H.
Enfield House P.A.I.
Chase Farm, Enfield.
North Middlesex County H.
Enfield I.D.
Northern Fever H. (L.C.C.).
Bishops Stortford P.A.I.
Bishops Stortford General H.
Hitchin, North Herts and South Beds H.
Chalkdell P.A.I., Hitchin.
Hertford County H.

Advanced base.—South Mimms Sanatorium.
Base hospital.—Bedford Mental H., Arlesey.

SECTOR 3 (BART.'S AND ROYAL FREE)

(Sir Girling Ball and Mr. C. A. Joll)

St. Bartholomew's H.
Royal Free H.
London Fever H.
London Chest H., Victoria Park.
St. Mary's H. (L.C.C.), Islington.
Highgate H. (L.C.C.).
Archway H. (L.C.C.).
Royal Northern H.
Hornsey Central H.
Finchley Memorial H.
Finchley I.D.
Colney Hatch Mental H. (L.C.C.).
Barnet Victoria H.
St. Albans, Oster H., P.A.I.
Cell Barnes Mental H.
Luton and Beds H.
Luton Poor Law Institution.

Advanced bases.—Wellhouse P.A.I.; Shenley Mental H.
Base hospital.—Bedford Mental H., Arlesey.

SECTOR 4 (U.C.H. AND CHARING CROSS)

(Dr. W. J. Pearson and Mr. Norman Lake)

University College H.
Charing Cross H.
National Temperance H.
Elizabeth Garrett Anderson H.
Italian H.
London Homœopathic H.
H. of St. John and St. Elizabeth.
St. Pancras H. (L.C.C.).
French H.
Royal National Orthopædic H.
H. for Sick Children, Great Ormond Street.
Hampstead General H.
Hendon Cottage H.
Hendon I.D.
Manor House H., Golders Green.
New End H. (L.C.C.), Hampstead.
North Western H. (L.C.C.).
Colindale H. (L.C.C.).
Redhill County H.
Watford Peace Memorial H.
West Herts H., Hemel Hempstead.
Hemel Hempstead P.A.I.
Stanborough Hydro, Watford.

Advanced bases.—Watford P.A.I.; Royal National Orthopædic H., Stanmore; Royal National Training College, Stanmore.
Base hospital.—Bedford Mental H., Arlesey.

SECTOR 5 (MIDDLESEX HOSPITAL)

(Dr. H. E. A. Boldero)

Middlesex H.
Paddington General H. (L.C.C.).
Harrow General H.
Wembley General H.
St. Andrew's H., Dollis Hill.
Willesden I.D.
Willesden General H.
Royal Bucks H., Aylesbury.
Aylesbury P.A.I.

Advanced base.—Mount Vernon H., Northwood.
Base hospital.—Bedford Mental H., Arlesey.

SECTOR 6 (ST. MARY'S)

(Sir Charles Wilson)

St. Mary's H., Paddington.
Hammersmith H. (L.C.C.).
Acton General H.
St. Charles' H. (L.C.C.).
Ealing I.D.
St. Vincent's Orthopædic H., Eastcote.
Central Middlesex H., Willesden.
Amersham P.A.I.
High Wycombe Memorial H.
Hanwell Mental H. (L.C.C.).

Advanced bases.—Hillingdon County H.; Hillingdon P.A.I.; Harefield Sanatorium.
Base hospital.—Park Prewett Mental H., Basingstoke.

SECTOR 7 (ST. GEORGE'S AND WESTMINSTER)

(Mr. C. H. S. Frankau and Mr. Rock Carling)

St. George's H.
Westminster H.
Western H. (L.C.C.).
Princess Beatrice H.
St. Stephen's H. (L.C.C.).
St. Mary Abbots H.
St. Luke's H.
H. for Diseases of Chest, Brompton.
West London H.
Fulham H.
Royal Masonic H.
Hounslow General H.
Staines I.D.
South Middlesex I.D.
W. Middlesex County H., Isleworth.
Isleworth P.A.I.
Isleworth Casual Wards.
Ealing General H.
Windsor P.A.I.
King Edward VII H., Windsor.
Slough P.A.I.
Basingstoke P.A.I.
Maidenhead Voluntary H.
Maidenhead Institution.
Park Prewett Mental H., Basingstoke.

Advanced base.—Staines P.A.I.

SECTOR 8 (ST. THOMAS'S)

(Mr. Max Page)

St. Thomas's H.
Lambeth H. (L.C.C.).
Battersea H.
South Western H. (L.C.C.).
St. John's H. (L.C.C.), Clapham.
Bolingbroke H.
St. James' H. (L.C.C.), Balham.
South London Women's H.
Grove Hospital (L.C.C.), Tooting Grove.
Putney H.
Queen Mary's H., Roehampton.
Nelson H., Merton Park.
Wimbledon General H.
Kingston County H.
Victoria H., Kingston.
Star and Garter H., Richmond.
Royal H., Richmond.
Richmond P.A.I.
Surbiton H.
Wilson H., Mitcham.
Guildford Royal H.
St. Anthony's H., Cheam.
Schiff Home, Cobham.
Southern Orphanage, Woking.
Sutton and Cheam General H.
Guildford Institution.
Weybridge General H.
Gordon Boys' Home, Woking.
Victoria H., Woking.
Farnham Institution.
St. Nicholas Orthopædic H., Pyrford.
Clandon Smallpox H.
Godalming Surrey County Sanatorium.
King George V Sanatorium (L.C.C.), Godalming.
Wokingham P.A.I.
Heatherwood H.P. (L.C.C.), Ascot.
Pinewood Sanatorium (L.C.C.), Wokingham.
Botleys Park Mental H., Chertsey.

Advanced base.—Brookwood Mental H.
Base hospital.—Park Prewett Mental H., Basingstoke.

SECTOR 9 (KING'S)

(Mr. John Hunter)

King's College H.
St. Giles H. (L.C.C.).
Dulwich H. (L.C.C.).
Norwood Children's H. (L.C.C.).
South Eastern Children's H., Sydenham.
Croydon General H.
Mayday H., Croydon.
Carshalton and District H.
Queen Mary's Children's H. (L.C.C.), Carshalton.
Beckenham H.
Bromley and District H.
Purley General H.
Redhill County P.H.H.
Radcliffe Convalescent Home, Limpsfield.
East Surrey H., Redhill.
Epsom County P.H. H.
Epsom P.A.I.
Royal Blind School, Leatherhead.
Surrey County H., Dorking.
Dorking and District H.
King Edward VII H., Haywards Heath.
Cuckfield Institution.
Horsham Institution.
Netherne Mental H.
Haywards Heath Mental H.

Base hospital.—Horton Mental H., Epsom.

SECTOR 10 (GUY'S)

(Prof. T. B. Johnston)

Guy's H.
St. Olave's H. (L.C.C.).
Bermondsey Medical Mission.
St. John's H., Lewisham.
Miller H., Greenwich.
Lewisham H. (L.C.C.).
Dreadnought H., Greenwich.
St. Alfege's H., Greenwich.
St. Nicholas H. (L.C.C.), Plumstead.
Brook H. (L.C.C.), Shooters Hill.
Park H., Hither Green.
Grove Park H. (L.C.C.).
Woolwich War Memorial H.
South Eastern H. (L.C.C.).
Sevenoaks General H.
Kent County Eye H., Maidstone.
Preston Hall H., Maidstone.
West Kent General H., Maidstone.
Joyce Green H. (L.C.C.), Dartford.
Orchard H. (L.C.C.), Dartford.
Orpington P.A.I.
Queen Mary's H. (L.C.C.), Sidcup.
Dartford County H. (L.C.C.).
Livingstone H., Dartford.
Gravesend and North Kent H.
Chatham County H.
St. Bartholomew's H., Rochester.
Kent and Sussex H., Tunbridge Wells.
Tunbridge Wells Homœopathic H.
Southern H. (L.C.C.), Dartford.
David Solomons Home, Southborough.
West Malling P.A.I.
Bexley Mental H. (L.C.C.).
Barming Heath Mental H., Maidstone.
Warlingham Mental H.

Advanced base.—Farnborough H., Kent.
Base hospital for the time being.—Pembury County H. near Tunbridge Wells.

In a speech delivered at the Royal Free Hospital on Tuesday last Mr. Walter Elliot is reported as saying that there would be no question of the Government taking over the voluntary hospitals in the event of war, and except for base and advance-base hospitals they would all continue so far as possible their civilian work. The Ministry of Health would pay for casualties received and would also reimburse the hospitals for salaries paid for whole-time casualty work.

L.C.C. JUBILEE EXHIBITION

ONE of the ways in which the London County Council is celebrating its jubilee is by an exhibition held in the conference hall and 25 rooms of County Hall. The exhibition was opened by Queen Mary on March 21, and will remain open until April 4.

The hospitals and medical services exhibit (rooms 6 and 7) shows how rapidly these have grown since the council took over the hospitals of the boards of guardians and the Metropolitan Asylums Board in April, 1930. The council now controls 76 hospitals, general and special. Over 100 doctors are engaged in the provision of medical relief, and every London school-child is examined at least four times while it is at school. The council also supervises all London midwives and provides medical aid in emergency; since the beginning of 1938 it has provided domiciliary midwifery and maternity nursing services. It also maintains a large ambulance service. The medical exhibit, besides calling attention to these important functions, includes an illustration of the methods employed by the council's chemists in testing materials for sophistication and estimating the vitamin-A content of food. The pathological exhibit contains examples of the apparatus in use for blood-grouping and the testing of specimens, and charts explaining the various processes. In the hospitals' section are shown a Sinclair apparatus for the treatment of fractures, a "Shropshire horse," an oxygen tent, the original and the latest Drinker respirators, and the "cuirass" positive-pressure and Bragg-Paul negative-pressure respirators. The Powers Samas accounting machine shows how bulk statistics are compiled by the various services: a questionnaire card is punched in the appropriate places and the machine records numerically the data indicated by the holes. The apparatus and methods used in the school medical service for correcting maladjustment of eyes and teeth occupy two tables, and the display of articles made for sale by tuberculous patients at Papworth and the Spero workshops is impressive. The exhibition contains a great deal of the handwork done by various classes of persons under treatment and protection, such as adolescent cripples, mental patients, mental defectives, and blind persons; the variety and beauty of these products show the care and energy which the council devotes to the creative aspect of their treatment. Some of the carpets, baskets, clothes and other things made by mental defectives are so attractive and well-finished that it is incredible that they are not the products of highly intelligent craftsmen. The mental-health services (room 4) are represented by photographs of the various activities in the daily routine of the council's mental hospitals and a series of exhibits showing the treatment by induced malaria of general paralysis of the insane. As a reminder of the distance that has been traversed in psychiatry during the last hundred years, some of the old strait-jackets and other instruments of restraint are on view. The exhibit of the nursing service (bay 4) in the conference hall contains some attractive models of well-designed wards and of the latest and most comfortable nurses' quarters, and a series of photographs of the work and recreation of nurses in training. The work on air-raid precautions (room 11) is shown by many photographs. These include a number of views of exploding bombs and burning buildings at Shanghai and of the evacuation of refugees from Barcelona. The scheme of the council for taking young children out of London is fully illustrated, as are the protective measures which householders are recommended to use against gas. One of the new trailer pumps stands in the middle of the room. Three rooms are devoted to education, one of the most important and arduous of the council's activities. Educational methods and the work of children are displayed in coloured plans, charts and pictures. Demonstrations by infants in nursery schools and displays of physical training by scholars from all types of schools are being given during the days of the exhibition.

The conference hall contains bays in which are grouped pictures, models and other exhibits illustrating the bridges and tunnels and the Woolwich ferry for which the council are responsible; the many street improvements which have been effected during the last fifty years; the parks and open spaces; the Green Belt; children's care; finance; and town planning. This last exhibit includes a model and a plan of the scheme for developing the south bank of the Thames, and a model of the county hall and its new extension. Other aspects of the council's work represented in the exhibition are public assistance, main drainage, public protective services (inspection of weights, measures, foodstuffs, petrol-pumps and so forth), supplies for the council's institutions, fire-fighting and smoke abatement. The exhibits in all rooms are grouped in an attractive way, are full of colour, and express the great vigour and ingenuity of the council's officers.

LETTERS TO THE EDITOR

INFECTION FROM DRESSINGS

SIR,—May I supplement what has already been said about the dangers of puerperal infection from spore-bearing anaerobes in sanitary pads? I am particularly concerned with *Bacillus welchii* septicæmia which, although rare, is more common than puerperal tetanus (I have seen four cases, all fulminating postabortal infections and three of them fatal, in the past two years). At first sight it may seem most likely that in such cases *B. welchii* is a contaminant from the rectum, since the organism is a common inhabitant of the intestinal canal, whereas human carriers of tetanus bacilli are rare in this country. But most clinical infections with *B. welchii* occur after abortion—22 of Hill's 30 cases were postabortal infections—and, again, in our yearly analysis of the bacteriology of puerperal sepsis at the North-Western Hospital we have found that *B. welchii* is recovered from the genital tract more often in postabortal than in puerperal cases (12 and 3·6 per cent.). Now, since the chance of intestinal bacteria reaching the genital tract is probably less after abortion than in a full-time confinement, and since the sanitary pad is a common dressing for the unattended case of abortion, I suggest that *B. welchii* may often be derived from this extraneous source. (In my limited experience *B. welchii* has been recovered more frequently from sanitary pads than has *B. tetani* which, however, may be simulated by other terminal-sporing bacilli.) Evidence for or against an extraneous source might be got by examining the serological nature of the toxin produced by strains isolated from dressings and genital tract since intestinal strains almost always produce α toxin. I suggest, also, that in a suspected early case of *B. welchii* infection—jaundice and hæmoglobinuria are almost pathognomonic signs—sulphanilamide, anti-gas-gangrene serum and massive doses of alkali should be given to try to stem the infection and prevent blockage of the kidney tubules by lysed blood.

I am, Sir, yours faithfully,

Frimley, March 17. R. CRUICKSHANK.

INQUIRIES ABOUT HOSPITAL PATIENTS

SIR,—In using your columns to ventilate a criticism of a certain aspect of hospital administration I am very keen that such criticism should be limited to the point at issue. I neither intend nor wish that anything more should be read into my complaint than is actually stated. The hospitals, both voluntary and municipal, give magnificent service to the patients; but regarding the patients' relatives there is room for considerable improvement.

In my particular work either I or my staff are being continually asked by workers to telephone to hospitals about wives and children who are under treatment and concerning whom the worker is anxious. Locally I find that information is given to inquirers courteously and with reasonable comprehensiveness; but the same does not apply in certain other big cities. Workers are expected to call at the hospital in person, and I think this shows a complete lack of understanding on the part of the hospital authorities. It is very often impossible for a man who is working away from home or on shift or under a variety of difficult conditions to go and call personally regarding his wife or mother or other relative. I know there are difficulties of giving information to possibly unauthorised persons, but some risk should be taken in this respect to meet a far greater domestic need. I do not like to hear of the worker who receives off-hand treatment from a hospital porter, or is told by some busy probationer that no information can be given, without any inquiry being made as to the need for the information.

Hospitals exist as a social service and the service to the patient is not the limit of their duty. If this matter was considered in its full implications I think that any reasonable person would admit the need for improvement and modification of existing methods. On the whole it is far easier to get information from the voluntary hospitals than from certain municipal hospitals.

The time has come when hospital porters should be far more efficiently trained in the technique of courtesy in handling patients and their relatives. I do not like being talked to about "the patient Jones" or "the man Smith." These things are of very great importance and through your columns I would ask all medical superintendents to look into this aspect of their work and see that a method of referring to people, which has long since been abandoned in the factory, shall not still be perpetuated in the hospital vestibule and outpatient department. Courtesy titles are omitted in reference to persons standing in the dock, and it is quite time that relatives attending certain hospitals should not be given the feeling that they are actually accused persons in a court of first instance.

I am, Sir, yours faithfully,

Nottingham, March 16. L. P. LOCKHART.

SIMPLE HERPES

SIR,—Herpes simplex is of common occurrence on the skin of the upper lip, especially near the lower margin, in children and young people during recovery from a "cold in the head," when this has been associated with a profuse watery discharge from the nose. As is pointed out in your leading article last week, permanent carriers of the virus have always the specific antibody in their serum and are subject to recurrent attacks of herpes, while those who are not carriers, and have no specific antibody in their blood, are not subject to these recurrent attacks.

The great majority of virus diseases are followed by a lasting immunity resulting from the persistence of antibody, often of high titre, in the blood, which may be reasonably attributed to the persistence of living virus as cellular inclusions, especially in reticulo-endothelial tissue cells in spleen or liver. Herpes simplex is one of the few exceptions to this general rule; in fact it appears that only those who possess circulating antibody, and are carriers of the virus, are susceptible to these recurrent attacks. I would suggest that a simple explanation can be given for this anomaly.

It is necessary for the prevention of virus infection that antibody should come into contact with a virus before it is included in a cell. In the case of poliomyelitis the virus, during its passage from the surface of the olfactory mucous membrane to the central nervous system, is protected by its inclusion in a nerve-fibre, and poliomyelitis may develop although antibody is circulating freely in the blood. The virus of herpes has been found in the saliva and conjunctival sac of healthy persons, and it is probable that it also persists as intracellular inclusions in the epithelial cells of the nasal mucous membrane of

carriers, and should be demonstrable in the watery nasal discharge during a "cold in the head." During the rhinorrhœal stage, constant dripping of fluid from the nose over the upper lip might lead to maceration of the superficial horny layer of epithelium which might be rubbed off, exposing the deeper living epithelial cells to infection with the virus, with subsequent production of vesicles. Bedson (1934) found that direct inoculation of human herpetic vesicular fluid on to the pad of a guineapig is uniformly followed by the development of typical vesicles. Virus inoculated in this manner would not be exposed to the action of circulatory antibody before reaching its destination.

I am, Sir, yours faithfully,

Worthing, March 17. HERBERT H. BROWN.

PRECANCEROUS CONDITIONS IN THE STOMACH

SIR,—Sir Arthur Hurst in the lecture published in your last two issues gives at length the promised evidence of the importance of achlorhydria as a precursor of gastric cancer, and cites an impressive list of publications. Since in these columns I have repeatedly declared that there is no longer any evidence at all in favour of this hypothesis, one or other of us must be guilty of exaggeration.

It is common ground that chronic irritation (specific or non-specific) is a factor in the development of gastritis and cancer. The evidence is partly analogy, partly dubious statistics, partly histology, and partly the fact that the distribution of cancers in the stomach appears to coincide with the sites of irritation gastritis—i.e., some two-thirds originate from the non-acid-producing mucosa of the antrum pylori, and most of the remaining third comes either from the lesser curve or from the posterior wall just below the cardia or from the "waist" of the stomach. The antrum is the mixing chamber of the stomach and gets most wear and tear from peristalsis, while the other areas bear the brunt of swallowed irritants, as can be seen by the localisation of damage following corrosive poisoning. The degree of gastritis in these sites is difficult to estimate with the present popular type of flexible gastroscope, but post-mortem material fixed soon after death shows how rare it is, after the age of forty, for all of them to be even approximately healthy. Such inflammation does not cause achlorhydria or hypochlorhydria. On the contrary, gastrectomy specimens prove that a *hyper*-chlorhydria is often present in cases of extreme localised gastritis, especially when the antrum is involved; while other experimental work on men and animals makes it improbable that the acid secretion can be permanently suppressed by superficial irritants. This is easy to understand if it is remembered that a fraction of the normal mucosa can produce a hyperchlorhydric response with most of the existing test-meal techniques. So much for agreed facts.

Where Sir Arthur differs from, I believe, every other living gastro-enterologist working on this problem, including those whom he cites, is in supposing that cancer does not arise from these localised areas of "physiological gastritis" unless and until some general process has destroyed the power of the rest of the mucosa to produce acid. Theoretically it is difficult to see why this should be so, and practically there is considerable evidence against it.[1] The burden of proof lies on Sir Arthur; but the only direct evidence which he gives to support his statements is two large series of pernicious-anæmia patients (one unpublished) with a slightly increased incidence of gastric cancer, together with random observations of an association between the two diseases.

If Sir Arthur had given all the published series (Washburn,[2] &c.) it would be seen that whereas the death-rate from gastric cancer is slightly raised for the first two or three years after the development of the anæmia, there after the proportion conforms with, or is slightly less than, expectation. The possibility or probability must therefore be accepted that in predisposed subjects even an early gastric cancer causes the pernicious-anæmia picture, and a true estimate of the risk of secondary cancer can only be obtained by estimating its incidence in patients in whom the diagnosis of anæmia lies at least five years back. Since also 5–10 per cent. of pernicious-anæmia patients show benign mucosal tumours, as compared with a general incidence in the autopsy room of 0·03–1·0 per cent. (Brown,[3] Haring[4]), and many of these polypi will in Hurst's opinion become malignant, it is unfair to ascribe the incidence of gastric cancer in pernicious anæmia entirely to the atrophy of the acid-producing mucosa.

Finally, may I reiterate the practical importance of settling this point now, on the evidence available? If Sir Arthur is right, two-thirds of gastric cancer arise in less than a fifth of persons, and this fifth can be discovered by using test-meals. Gastroscopists are therefore being tempted to call polyadenoma *en nappe* in achlorhydric stomachs an early cancer, and morbid histologists haven't always the confidence to say it isn't. Once we lose sight of the distinction between what is cancer and what isn't, we shall have a spate of unnecessary gastrectomies, pseudo-cancer-cures and misleading statistics.

I am, Sir, yours faithfully,

DENYS JENNINGS.

Oxford, March 18.

1. Jennings, D., *Lancet*, 1937, **2**, 1404.

VACCINES WITH CHEMOTHERAPY IN PNEUMONIA

SIR,—In your issue of March 11 the pathological aspects of the combined use of M. & B. 693 and vaccines in pneumonia are carefully investigated by Drs. Maclean, Rogers and Fleming from St. Mary's Hospital. One of their important conclusions is that "a strong case is made out for the combined use of vaccines and M. & B. 693 in all cases of pneumonia in man . . . and that the initial doses of 693 should be large." The pneumococci are killed by antibodies (increased by the vaccine): the 693 merely reduces their vitality.

Clinically, I can support this from material which happens now to be available. In pneumonia in children I have used 693 (though in timid doses) ever since its introduction, combined with Wynn's vaccine (used consistently for about fifteen years). But I did not use 693 in the full doses recommended by the makers till Jan. 1, 1939. Since then I have treated 28 cases of pneumonia, all under five years of age—with one death in a child admitted in convulsions on the seventh day, too late for vaccine. The temperature nearly always subsided within three days. Clear cases of bronchitis were not thus treated; but in children it is often impossible to be sure of a diagnosis on admission. So it was felt to

2. Washburn, R. N., and Rozendaal, H. M., *Ann. intern. Med.* 1938, **11**, 2172.
3. Brown, M. R., *New Engl. J. Med.* 1934, **210**, 473.
4. Haring, W., *Münch. med. Wschr.* 1938, **2**, 1544.

be much safer to treat cases thought to be pneumonia —perhaps erroneously—rather than to wait and see.

In these 28 cases I can state that (1) full doses of 693 seemed to do no harm except in causing mild vomiting in 2 cases which ceased when the drug was stopped; (2) in an extensive experience of Wynn's vaccine I have never seen the slightest evidence of bad effect and the mortality has been very low (? 5 per cent.) (the "negative phase" bugbear has been clinically invisible); (3) my impression is that 693 shortened the pneumonia. Antipneumococcal serum was never given, as in children it is much less applicable than vaccine owing to the lack of sputum for typing.

The doses used were: Wynn's vaccine (Evans Sons Lescher and Webb) ¼ c.cm., ⅔ c.cm. and 1 c.cm. on the first, second and third days of admission, but not started later than the fourth day of pneumonia. M. & B. 693 was given 4-hourly: under 6 months ¼ tablet, under 2 years ½ tablet, under 5 years ¾ tablet—reduced to 6-hourly after a few days without fever. The ½ gramme tablets were crushed.

Thanks are due to Dr. W. M. Davidson, my house-physician, for extracting these facts and figures.

I am, Sir, yours faithfully,

Royal Infirmary, Hull, March 20. F. C. EVE.

STORED BLOOD FOR TRANSFUSION

SIR,—The use of stored blood in two carefully observed series of transfusions is recorded in your issue of Feb. 18. Unfortunately the writers may in some measure have defeated their own object by over-emphasising the risk of infection, since it is just this bogy which has hitherto prevented the extended use of the method.

In this hospital we have used stored blood as a routine for nearly four years, and besides adding greatly to the convenience of our donors and ourselves it has undoubtedly saved a number of lives. The blood has been collected into the open neck of a bottle of 3·8 per cent. citrate. Within the limits of this method exposure to the atmosphere is avoided, but no exceptional precautions have been taken. The blood has been stored at 4° C. for periods up to three weeks before use. We have now carried out over 300 transfusions in this way and neither from the appearance of the blood nor from its effect on the patient has there ever been any reason to suspect contamination. Sterility tests have been carried out occasionally, but no organisms have grown.

The use of a closed method for collection, and I.H.T. solution as a preservative, are improvements to which I have been recently converted, and are to be strongly recommended. With such improved technique there need not be the slightest anxiety about contamination, and sterility tests are quite unnecessary. The method will undoubtedly come into general use.

I am, Sir, yours faithfully,

R. VAUGHAN FACEY.

Royal Victoria and West Hants Hospital, Bournemouth, March 18.

MENTAL NURSING

SIR,—Dr. Kimber, in your issue of March 11, brings into prominence an urgent problem regarding the training of mental nurses. The topsy-turvy order in which the probationer nurse is officially expected to acquire her knowledge of nursing demands early reform. It is entirely illogical that the preliminary examination, for which she works during her first twelve months of training, should consist of anatomy and physiology, accidents and emergencies, hygiene and some elementary general nursing, to the *total exclusion* of anything relating to the management of psychiatric patients. It is true that in the Royal Medico-Psychological Association's syllabus for the preliminary examination there is a section on the "general duties of nurses in a mental hospital," but in the association's handbook a bare twenty pages are apportioned to this subject, only two of which are devoted to consideration of "the relation of nurse to patient."

I am not qualified to express an opinion as to whether it is practical politics to prevail on the General Nursing Council at the present time to include an elementary course in normal psychology in their preliminary examination (which is taken by probationer nurses in general and mental training alike), and I doubt whether such a course would be of very much value to either the general or the mental probationer; but in my opinion a more practical step would be for the Royal Medico-Psychological Association to insist on a short course of lectures on how to understand and handle different types of psychiatric patients, to be taken during the first three months of training for their diploma. The General Nursing Council should then be encouraged to follow this lead by making it compulsory that those candidates intending to qualify as mental nurses should receive a similar course of lectures before taking their preliminary examination.

I am, Sir, yours faithfully,

FRANCIS PILKINGTON.

Maudsley Hospital, S.E.5, March 21.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 11, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1679; diphtheria, 1044; enteric fever, 12 (29 "expected"); pneumonia (primary or influenzal), 1396; puerperal pyrexia, 198; cerebro-spinal fever, 48; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 1; dysentery, 61; ophthalmia neonatorum, 96. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on March 17 was 3338, which included: Scarlet fever, 666; diphtheria, 750 (carriers, 46); measles, 8; whooping-cough, 880; puerperal fever, 11 mothers (plus 5 babies); encephalitis lethargica, 300; poliomyelitis, 2. At St. Margaret's Hospital there were 26 babies (plus 15 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox or from enteric fever, 7 (0) from measles, 2 (0) from scarlet fever, 18 (4) from whooping-cough, 24 (2) from diphtheria, 44 (8) from diarrhœa and enteritis under two years, and 261 (75) from influenza. The figures in parentheses are those for London itself.

The number of deaths attributed to influenza has fallen, the totals for this week and the ten preceding weeks (working backwards) being 261, 284, 285, 255, 265, 210, 173, 223, 214, 144, 89. Of these 261 deaths 167 were reported from the south-eastern area, Portsmouth contributing 8, Luton 7, Southend-on-Sea 6, Croydon, Willesden, and Southampton each 5; 51 were reported from the northern area, Sheffield contributing 7 and Leeds 6; 28 from the midland area, Birmingham contributing 6 and Bristol 5; and 14 from Wales, Rhondda contributing 7 and Cardiff 5. Fatal cases of diphtheria were scattered over 17 great towns, South Shields reporting 3.

The number of stillbirths notified during the week was 265 (corresponding to a rate of 41 per 1000 total births), including 54 in London.

OBITUARY

JAMES LEONARD JOYCE

M.B. CAMB., F.R.C.S.

Mr. Leonard Joyce, the Reading surgeon, died of angina pectoris on March 18 at the age of 57. He was the son of Prebendary J. B. Joyce and was born at Coreley, Salop, in 1882. He was educated at Shrewsbury School and King's College, Cambridge, where he took first-class honours in the natural sciences tripos in 1904, and did his clinical work at St. Bartholomew's Hospital. He qualified in 1907, and after doing house appointments at St. Bart's passed his final F.R.C.S. in 1909. He then went into partnership with J. B. Hurry and M. W. Coleman in Reading, and his experience as a general practitioner no doubt contributed to his success as a general surgeon. He was appointed surgical registrar to the Royal Berkshire Hospital in 1913, and during the war was in charge of the special surgical section of the Reading War Hospital, where he had unusual opportunities to develop his surgical bent.

After the war Joyce gave up general practice and devoted himself to surgery, being appointed to the staff of the Wingfield Orthopædic Hospital at Oxford, the War Memorial Hospital at Henley and other hospitals in the neighbourhood. His reputation was not merely local. Everyone who came into contact with him recognised his outstanding ability. His outlook was that of scientific observer and a wise physician and he undertook an operation only after most careful consideration of all aspects of the case. He made a first-class consultant, for he combined wide surgical knowledge and a high degree of technical skill with a quiet and unassuming self-confidence and unlimited patience. His interests—and publications—ranged from plastic to abdominal surgery and he adapted a follow-up system which he had devised originally for cases of malignant disease, to provide accessible records of all his patients. He described this system in the *Royal Berkshire Hospital Reports* for 1933 and noted that he had managed to keep in touch with all but a very few cases. He was one of the editorial committee of this publication and contributed to each of its 4 issues one or more articles of high quality—the last, in 1937, being a review of the results of the combination of surgery and X rays in the treatment of carcinoma of the breast at different stages.

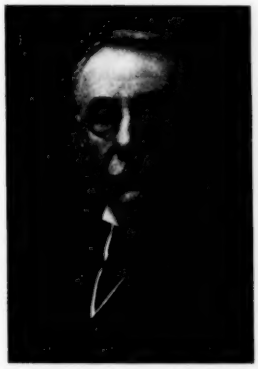
A "son of the manse," Joyce was an ardent churchman, a chorister, churchwarden and bell-ringer, and he also took a special interest in the development and welfare of Reading University. He was a keen and skilful fisherman. "His death," writes Prof. G. R. Girdlestone, "is a great loss to surgery and a far greater and more personal loss to those who were fortunate enough to know him well. Leonard Joyce and I saw a good deal of each other during 1918 and 1919 when he was in charge of the war orthopædic surgery in Reading, and I of that in Oxford. As time passed our friendship grew deeper and happier, though we were both too busy to see one another often apart from the meetings of the Association of Surgeons and the British Orthopædic Association. As a surgeon he was of outstanding quality, great in technique and accomplishment, but outstanding on account of his character, his care and conscientiousness, and his beautifully balanced judgment. He was never distracted by false values. He was the truest and most modest of men. I have known him as his colleague, as his grateful patient, and I am thankful to say as his friend for twenty years. He was always the same, a charming companion and the best friend a man could have."

Mr. Leonard Joyce married Miss Alice Whitefoord and his wife survives him.

CHARLES ALEXANDER CLARK

L.D.S.

Mr. Charles Clark, who died on March 11 at the age of 78, was the pioneer of dental radiography in this country, and he demonstrated his first radiogram of the teeth to the Odontological Society of London in 1896, within a year of Röntgen's discovery of X rays. He was born in London in 1860, and was educated at Merchant Taylors' School and the National Dental Hospital, where he distinguished himself as a student. For some years he practised dental surgery in London, but as the demand for his services as a radiologist grew he gradually gave up general practice. In the early days he made most of his own apparatus, and before films were invented prepared his own photographic plates. Many of the devices he introduced are still in common use.



[*Russell & Sons*

During the war he acted as radiologist to various military hospitals and also found time to serve as a special constable. After the war the general recognition of the possibilities of apical dental infection led to a great increase in the use of dental radiography and Clark's time was kept fully occupied by both dentists and doctors in search of infective foci. By then he was taking dental radiograms of a technical excellence that has never been surpassed. When the Royal Dental Hospital formed an X-ray department Clark became its first radiologist. He was president of the metropolitan branch of the British Dental Association in 1919, and he was a member of the council of the Röntgen Society, vice-president of the odontological section of the Royal Society of Medicine and in 1931 président d'honneur of the radiology section of the International Dental Congress in Paris.

For some years Charles Clark suffered from asthma and a weak heart; but his capacity for work was astounding in spite of this handicap. His opinion on a radiogram was exceptionally sound, though he took care never to trespass on the province of the dental surgeon by advising extraction. It was as a technician however that he excelled, and his work helped to hasten the evolution of the specialised technique of dental radiography. He was a shy and sensitive man, modest, cheerful and scrupulously honest. He was most generous in giving his colleagues the benefit of his skill and he must have possessed films of the mouth of the majority of his professional neighbours. Ill health made him give up active work ten years ago.

Mr. Charles Clark married twice. A daughter by

his first wife is now a medical officer at Singapore, and he also leaves a son and daughter by his second wife.

ROBERT GIBSON
M.D. EDIN.

Dr. Gibson, lecturer in skin diseases at Manchester University, died at his home in Manchester on March 17. He was born at Port William, Wigtownshire, in 1876 and came of a seafaring family; it may be this which gave him that strength of character which was his most obvious quality. He was educated at George Watson's College and Edinburgh University and graduated in 1896 after a distinguished undergraduate career. After a residential appointment in Carlisle he went east to practise in Hong-Kong for four years. On his return he held several appointments in London and Liverpool and thereafter conducted a successful general practice in Manchester until just before the war. He had the misfortune then to lose an arm as the result of blood-poisoning contracted during an operation. This disaster led him to desert general practice for specialisation in diseases of the skin.

In 1917 Gibson became assistant medical officer at the Skin Hospital, Manchester, and later he was appointed honorary physician, a post which he held up to the time of his death. He was also honorary dermatological physician at the Salford Royal Hospital and at the municipal hospitals of Crumpsall and Booth Hall. As a consultant he attained the highest reputation both for his professional skill and his personal qualities, and he became president of the North of England Dermatological Society and of the Manchester Medico-Ethical Association, and vice-president and secretary of the Manchester Medical Society. He took a personal interest in all his patients and spared no pains to see their disabilities from their own point of view. He was especially skilled and experienced in dealing with industrial diseases of the skin and was held in high repute by judges and medical assessors of the courts for the clear and reliable manner in which he presented his evidence in compensation cases. The loss of his arm seemed only to bring out more fully the happiness of his disposition and his courage in overcoming difficulties. In golf, in trout fishing, and in sailing he was an adept, and his companionship in these fields of sport added unfailingly to the zest of any gathering.

HENRY SIMPSON LUNN
KT., M.D. DUBL., J.P.

IN Sir Henry Lunn's long and varied and almost romantic life medicine was scarcely more than an occasional interest. Besides being a doctor he was an organiser of travel, and it was this that made his name famous. But his tours and hotels and conferences, like his medical degrees, were only an unconventional development from his original career in the Methodist ministry; and unity in and through religion preoccupied his mind to the end.

He was born at Horncastle in Lincolnshire in 1859, the son of Henry Lunn of West Ashby House. From the local grammar school he went to Headingley College to train as a minister, but at 24 he decided to qualify as a medical missionary. In four years at Trinity College, Dublin, he graduated in arts and medicine, served as secretary of the Historical Society, and helped to found the Irish Protestant Home Rule Association. In 1887 he married Ethel, eldest daughter of the late Canon Moore, and soon afterwards Dr. and Mrs. Lunn set out for India. After a single year, however, he had to be invalided home, and on returning to England it was no longer medical practice that engaged him. Still a Methodist minister, he started religious work at the Regent Street Polytechnic and also took to journalism. In 1892 he began to arrange reunion conferences—"ecclesiastical picnics" as they were unsympathetically called—at Grindelwald in Switzerland, and in so doing he discovered so great a talent for organising such affairs that he was led to give his whole time to the creation of travel agencies. Nevertheless the success of his enterprises did not prevent his editing (and largely maintaining) a magazine, the *Review of the Churches*—dedicated to the reunion of the Churches and to international peace—which ran from 1891 to 1897 and was revived, again under his editorship, from 1923 to 1930. Nor did it prevent his earning, by brave utterances as a Liberal candidate and otherwise, the label of pro-Boer and, before the late war, pro-German. At this time he particularly cultivated contacts with Germany, and dispatched "good-will tours" thither and elsewhere. An obituary notice in one of our contemporaries speaks of his being misled into the belief that friendly personal relations between the intelligentsia of various countries could avail against the forces of military and economic ambition; but perhaps the idealist saw further than his critics.

Lunn had been knighted in 1910 for public services, and after the war, as before it, his leisure was filled with public objects, ranging from the preservation of Stratford-on-Avon to the support of the League of Nations Union (for which he lectured on a world tour) and the convening of the Mürren conference of bishops, clergy, and Nonconformists in 1923. He wrote books on missions, books of spiritual meditation and books on politics, as well as accounts of his life and travels, and he took pains over the disposal of his fortune, during his lifetime, to the causes he cared for most. Meanwhile his interests had branched out in many semi-commercial directions, from the founding of the Hellenic Travellers Club, with Lord Bryce, in 1906, to the revival of a northern spa, the development of sanatoria, and the promotion of winter sports. Dr. Fortescue Fox, writing of the good he did in such ways, says: "It was Sir Henry Lunn who showed the way to my generation to delightful and quite simple holidays in winter. In the early days of this century the British instinct for travel more often than not went unsatisfied. It was an immense service to young students and their friends to make such a dream a possible reality. All over the country there are many people who owe to these pioneers of travel the experience of a lifelong stimulus and mental enlargement. Social habits have been modified, fixed holiday seasons have been 'staggered' into the winter, and ideal vacations have been made available, when most needed, to city-dwellers and to medical men and others with arduous work in the summer. With this happy gift for organisation, Lunn had also deeper qualities—a love of nature, a lifelong feeling of religion, and a feeling also for the true health resort, including so many influences making for happiness and health. It was characteristic of him that, in spite of a grave malady, he should persevere till his eightieth year and be journeying when he died."

Sir Henry Lunn's final illness began at Toulon where he was about to welcome members of the Hellenic Travellers Club—many of them medical—on a visit to Greece. He died in London on Saturday last, and Lady Lunn, with whom he celebrated his golden wedding in 1937, survives him with three sons.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

THE work of the House of Commons during the last week has been carried on to the clank of mechanised armies marching across Europe, to the roar of aeroplanes demonstrating over Prague, and to the weeping of a defeated nation. And appropriately enough our considerations have been largely of armed forces and of defence preparations. Mr. Shakespeare, speaking for the Admiralty, told us of the power wielded by the Navy and of its ability to meet any probable combination of powers and to keep the Mediterranean route open in time of war. Sir John Anderson spoke of the early introduction of a bill to deal with Civil Defence and said that he prefers this expression to the alternative Passive Defence because it is liable to be so very active. In this bill the duties of employers to provide protection for their workers will be more clearly defined than at present and every business, whether industrial, commercial or other which employs more than 50 persons will have the duty imposed upon it to provide protection of certain kinds. Employers of numbers of 50 or below do not escape their obligation to provide protection but their relation to the Government scheme is not the same.

The bill when introduced will provide for financial assistance to employers in various ways—it may be in the form of financial help which will be equivalent to remission of income tax at standard rate or, in certain circumstances, to assistance at a higher figure. Details must await the bill and its discussion and possible amendment, but it is certain that the duty exists and that financial assistance in some form will be given. Sir John Anderson specifically stated that such financial relief would be retrospective. There is however a time limit to the granting of financial aid to the employer and this takes the form of the fixing of a date in the bill on or before which work on protective schemes must be begun if financial help is to be obtained. The possibility of amendment remains, but it can only be an amendment to increase the financial aid.

Behind the scenes of A.R.P. the tremendous surge of work goes on in hospital and casualty organisation, but it is worthy of note that this will depend for its efficiency and its success less on legislation or even local government administration than on the organisation of the medical profession itself and particularly on the organisation of the great teaching hospitals. In military language the medical profession supplies a reserve of civilian personnel ready and largely trained for their work and up to 95 per cent. of their ration strength. Another aspect of A.R.P. which is being very carefully studied is that of the problem of shelter protection for the civilian population and this is by no means insoluble. Taking the country as a whole there are two main divisions—first the urban areas and second the rural areas into which children and surplus population will be evacuated in time of war. The rural areas do not require deep-shelter protection and what other protection they may require is a matter for decision in the counties concerned and must depend on local conditions In the urban areas it is calculated that one-third of the population will leave in war-time for the evacuation areas so that the problem can be expressed in numbers of people and numbers of urban areas. Even in urban areas the likelihood of air attack varies very much from place to place. Apart from London which is the most difficult case it is probable that many urban areas will only suffer from sporadic attacks and that the heaviest types of bombs will not be used. The danger to be expected from bombing is severely limited by the physical conditions and perhaps the psychological conditions under which the bombing squadron must work. Present anti-aircraft defence is so far good as to compel any invader to fly at a very great height from which accurate aiming of bombs—especially in view of the high speed of the modern bomber—is to say the least very difficult.

Any immediate inference as to the effect of bombing in Great Britain derived from bombing in Spain or even in China is of very dubious value. In Spain owing to the very weak anti-aircraft defence the attacking bomber was able as a rule to fly at a height chosen by himself. He often flew long distances at a low altitude and the frequent history of machine-gunning of armies or civilian refugees from the air shows how low this was. There was this low-flying and machine-gunning of civilians, and also by the way of cattle in the fields, at Guernica in the Basque country at an earlier period of the war and of the refugees from the defeat of the Republicans in Catalonia quite recently. Any invading bomber attempting such tactics over Great Britain would have to belong to a suicide squadron.

It is not possible to know how an air attack would develop in detail, but it is certain that there are some important objectives such as docks, large armament works, central power stations and the like which must at all costs be defended adequately and their work continued.

The logical point of departure in considering shelter protection is to note (*a*) those industries or activities which must be maintained in full working activity, (*b*) their location, and (*c*) to give 100 per cent. protection to these industries and activities and to the locality in which they are situated so that the total working population there, including those engaged in supplying the food and other needs of the workers, shall be as safe as war-conditions allow. It is doubtful if the very large air-raid shelters sometimes proposed—some have been suggested to hold up to 7000–are reasonably safe however deep underground. Such a large shelter in a town must drain, as it were, a considerable area of streets, squares, and apartment buildings. Whether under conditions of air attack at night in complete darkness all of the people scheduled for such a shelter would arrive at the entrance or whether twice that number would arrive could only be ascertained by experience. And the experiment might prove to be excessively costly in life and suffering. If a shelter is 3, 4, or 5 minutes' walk away in daylight it might easily be 15 to 30 minutes away at night during an air attack. In areas liable to attack by large bombs, and this is a military matter which can be estimated, deep shelters will be required, but they should be comparatively small, holding 50 to 100 only. Outside the areas of special danger many towns will not be liable to attack except by medium-sized bombs for which suitable protection can be given more easily than for the large bombs.

It is reasonable to divide Great Britain from the point of view of deep-shelter protection into four zones—first the rural evacuation areas in which it is not required, second the dangerous areas (docks, power stations, &c.) in which 100 per cent. protection

is required against very heavy bombs, third urban areas adjacent to the dangerous areas in which less deep protection will suffice, and fourth urban residential areas pure and simple in which the shelter protection needed is still less but where it is still required. In a "total" war as any war today must be the civilian is just as much on the field of battle as the sailor, soldier or airman and the activity of civilian production just as necessary if we are to be successful in war. The defence of the civilian worker must be looked at from this point of view; on the adequate protection of the civilian in the dangerous areas the issue of a war may well turn. The civilian will need just as much protection as do the armed forces.

In a world of violence it is pleasant to turn even to such a subject as the Criminal Justice Bill. The point of controversy on the committee has been the question of flogging. Much legal and medical opinion is against flogging and Sir Samuel Hoare, the Home Secretary, is apparently determined on its abolition as a normal punishment. On the other hand a large number of Government supporters are in favour of the retention of flogging. If the Government persist in their determination to abolish flogging it will be an interesting example of the straining of party loyalty under the pressure of the party whip. The dilemma is, for the detached spectator, an interesting one, for, if some Conservatives opposed the abolition of flogging and it was carried by the help of the Labour and Liberal Parties, the Conservatives and the Conservative National Liberals would have a lot of explaining to do to their constituents. And the flogging question is one of difficulty because its consideration lacks scientific precision. Are the pro- and anti-floggers in favour of their views for the sake of society, for the sake of the criminal, or is there something else?

FROM THE PRESS GALLERY

The Cancer Bill

IN the House of Lords on March 15 the debate was resumed on the motion for the second reading of the Cancer Bill, and on Lord Balfour of Burleigh's amendment expressing regret that the bill did not contain a provision for increased research into the cause and treatment of the disease.

The Earl of DONOUGHMORE said that at this moment out of four cases of cancer that might benefit by treatment only one was receiving treatment. He hoped that the sum of £700,000, which had been mentioned, was not going to be reduced and switched over to research. If any more money was to be devoted to research it should be additional to that provided under this bill. Lord Donoughmore quoted figures from a statistical report of the National Radium Commission issued in 1937 to support his view that the estimate of the life of a cancer patient as eighteen months given by Lord Balfour of Burleigh was much too pessimistic. There had been a definite improvement and increase of knowledge in the treatment of cancer. There was too much working in watertight compartments. Those engaged in research were not sufficiently in touch with the clinicians, and vice versa, and there was not always coöperation among those treating the disease. The ideal system of treatment was where every case suspected of malignant disease was seen at once by a team of workers. One of the most important points in the bill was the power given to local authorities to pay the expenses of patients, and even of a companion, in order that they might travel to centres where treatment was organised. Lord Donoughmore wished they could envisage a more organised system for the training of radiotherapists. It was dangerous for X-ray apparatus to get into ignorant hands, and he hoped that the Government would do all they could to encourage the training of radium officers and to improve their status. He hoped that, in keeping of adequate records, care would be taken to build on the records of the past. For the first time under the new scheme local authorities were given responsibility for cancer. Hitherto the organisation of cancer treatment had been largely left to the voluntary hospitals and to the medical faculties of certain universities. Coöperation between local authorities and the great voluntary hospitals in the organisation of the schemes necessary under this bill was desirable.

The Earl of SUFFOLK AND BERKSHIRE, who is engaged in pharmacological research at Oxford, supported the amendment. He remarked that while much had been said about the treatment of cancer by radiotherapy he had not heard anything about research in chemotherapy. Chemotherapeutic successes had been won slowly, and they had very nearly reached the stage where they might yield something of value. He was assured that chemotherapy was showing remarkable promise in a laboratory in London, the Cancer Hospital (Free), under the direction of Prof. Kennaway and his co-workers. They had discovered a compound which when injected would reduce the size of a tumour to a singularly small pin's head. Admittedly this had not yet been tried in clinical medicine, but he prophesied that in a very short time successful results would be obtained on these lines. Lord Suffolk thought that it was advisable that more money should be provided for cancer research. He had actually seen a brilliant experiment, which might well have changed the whole complexion of the cancer problem, held up for the lack of £12 10*s*. As to watertight compartments, recently he had seen a scheme for a central clearing-house for the direction of research and for the communication of published papers.

Viscount TRENCHARD said that as one who had some slight knowledge of the want of research into this terrible disease he would support the amendment.

Viscount SAMUEL said in his opinion the whole attitude of the state towards research was wrong. Considering the vastness of the national income and revenue the sums expended on research were insignificant compared with the need. Research was not a matter for spasmodic voluntary contributions, for appeals to emotion, for sending round the hat, for bazaars, and all the various propaganda for voluntary efforts. National health, though not more urgent than national defence, was at least as necessary, and the requirements of research for the prevention and cure of cancer should surely command at least as great attention and sympathy from the Government. They had witnessed great triumphs of both preventive and curative medicine during the last century. There was no reason why they should adopt a mood of fatalistic surrender and believe that the problem of cancer was insoluble. The report of the Medical Research Council showed that there were very many hopeful developments. For these reasons he supported the amendment.

The Duke of DEVONSHIRE, under-secretary of state for dominion affairs, replying to the debate, said that the question of increased grants by the Government towards research could not properly be dealt with in this bill. Legislation was not necessary to enable the Government to allocate increased funds for that purpose. He hoped that the immensely authoritative statements which had been made in their Lordships' House would have some effect on the Lord President of the Council. He promised to bring the very weighty representations of the various speakers in the debate to the notice of the Chancellor of the Exchequer.

Lord BALFOUR OF BURLEIGH said that he knew quite well that he could not get any of the £700,000 for research and he had no desire to deprive the treatment side of a penny of that money. As regards the satisfactory figures quoted by Lord Donoughmore of lives prolonged by radium treatment, they were all cases of cancers treated in the

early stages and in accessible positions. They were selected cases for which this treatment was proven and for which they all welcomed the fact that treatment was to be extended. If he (Lord Balfour) was wrong in estimating the average duration at eighteen months the great army of victims of cancer to which he had referred could only be greater, because if the duration of the disease was longer and 70,000 died every year then the size of the army was extended by the length of the duration of the disease. Therefore he submitted that his picture was rather an understatement than an exaggeration. While he was grateful to the Duke of Devonshire for what he had said he was not entirely satisfied. The money required for research was infinitesimal compared with the amount which the Government were devoting to treatment. To establish a research unit such as the Medical Research Council had in mind would cost something like £30,000 a year for ten or fifteen years. In view of the expression of opinion that had fallen from noble lords in every quarter of the House before he withdrew his amendment he appealed for some expression of opinion from the Government that it would be possible to deal with this matter of research.—Earl STANHOPE, First Lord of the Admiralty, said that he would certainly represent to the Chancellor of the Exchequer the expression of opinion from all quarters of the House. The amendment was by leave withdrawn and the bill was read a second time.

COÖPTION ON CANCER COMMITTEES

In the House of Lords on March 21 the Cancer Bill was considered in Committee. The Earl of ONSLOW was in the chair.

Lord ELTISLEY, moving an amendment on behalf of the County Councils Association, explained that under clause 1 it became the duty of every county and county-borough council in England and Wales to secure facilities for the treatment of persons suffering from cancer; and the Minister of Health might require two or more such councils to combine for the purpose. Joint boards or joint committees so constituted could coöpt outside persons up to a third of their personnel. They could do this without obtaining the assent of the local authorities who set them up; and once established the joint committees could snap their fingers at the local authorities. Under the terms of Lord Eltisley's amendment it was proposed that before coöption was allowed the assent of those responsible for setting up the committees must be obtained. Local authorities regarded this power of coöption as a dangerous innovation introduced into local government and as inconsistent with previous legislation.—The DUKE OF DEVONSHIRE accepted the amendment on behalf of the Government.

ADVERTISEMENT OF CANCER CURES

Viscount BERTIE OF THAME moved an amendment to provide that the prohibition of the advertisement of cancer cures should not apply to reports or accounts of treatments for cancer issued or published orally or otherwise by practitioners, registered or unregistered, to persons or in publications other than those specifically mentioned in the bill. He argued that the clause in its present form would stop a great many unregistered persons from carrying on investigations which might prove of incalculable value to mankind. Registered practitioners, he said, had the medical press in which to express their views and publish the results of their investigations, but unregistered persons had no such means. In this matter he was thinking also of such persons as herbal curers, faith-healers and Christian Science practitioners. It was true that the present Solicitor-General had said that he would not give his consent to a prosecution in the case of such persons, but that did not bind the learned gentleman's successors.

The DUKE OF DEVONSHIRE said that the Government could not accept the amendment, for its effect would be to enable either medical practitioners or any other persons to advertise any cure. It was desirable to take steps to deal with a possible recrudescence of the advertising of cures for cancer. The clause did not prohibit any unregistered person from treating cases, or from making investigations, nor did it prohibit him from circulating the results of his investigations to the persons and bodies mentioned in the bill. Nor did the clause prohibit him from securing publication in a scientific or other periodical of any results he might achieve. All it did was to prevent him from holding out a cure and advertising himself or his associates or his methods or material as a cure. The Government was not anxious to interfere with any such body as the Christian Scientists.

The MARQUESS OF LOTHIAN agreed that it was important to prevent advertisements of quack remedies, but it was also important to close no possible avenue by which a cure for cancer might be found, even though it was unorthodox.

The Lord CHANCELLOR said that damage would be done by all sorts of people making reckless statements about cures. This clause was really necessary in the interests of the public. In the extraordinarily unlikely case of a layman being able to discover and test the validity of some alleged cure for cancer he would have no difficulty in bringing the matter before the world.

The MARQUESS OF LOTHIAN said that there was trade-unionism in every profession, and there had been certain cases in which considerable obstruction had been put in the way of medical discoveries by unorthodox means. He wanted to be quite sure that there was some way by which, if an unorthodox person did find a remedy, that remedy would be investigated and the results published.—The Lord CHANCELLOR replied that there was no difficulty in the way of an unorthodox person making known an alleged discovery of a cure for cancer to those who were not likely to be misled. Advertisements could be made, for example, to members of either House of Parliament, to local authorities, to governing bodies of hospitals, registered medical practitioners, nurses, pharmacists and others. He could not believe that in those circumstances there was any risk of any miracle of that kind remaining unknown.

The amendment was by leave withdrawn.

Bastardy (Blood Tests) Bill

In the House of Lords on March 16 on the motion of the Earl of LUCAN the following were named as the Select Committee to consider the Bastardy (Blood Tests) Bill: Earl Beauchamp, Viscount Dawson of Penn, the Bishop of Salisbury, Lord Foxford, Lord Strathcona and Mount Royal, Lord Merthyr, Lord Swinfen and Lord Brocket.

The Mining Industry (Welfare Fund) Bill was read the third time and passed.

QUESTION TIME

WEDNESDAY, MARCH 15

Medical Supplies on British Ships

Sir WALTER SMILES asked the President of the Board of Trade if he was aware that many large ocean-going British ships did not carry the latest proved drugs for combating sepsis; and if he would consider some alteration in the regulations so that these were carried, with instructions for their use.—Mr. RONALD CROSS, parliamentary secretary to the Board of Trade, replied: My right hon. friend is causing full inquiries to be made into this matter and he will consider whether the existing regulations need to be amended.

THURSDAY, MARCH 16

Nutritional Standards of School-children

Mr. RIDLEY asked the Parliamentary Secretary to the Board of Education what percentage of children attending elementary schools under the authority of the Lancashire, Derbyshire, Durham and Glamorgan county councils were found at the last routine nutriton inspection to be excellent, normal, slightly subnormal and bad, respectively.—Mr. KENNETH LINDSAY replied: The following are the

returns concerning the nutrition of children attending public elementary schools submitted by the school medical officers for the four areas in question for the year 1938 :—

Area	Excellent	Normal	Slightly subnormal	Bad
	%	%	%	%
Lancashire ..	10·61	80·67	8·29	0·41
Derbyshire ..	16·46	63·91	19·16	0·45
Durham ..	14·64	60·41	23·39	1·54
Glamorgan ..	6·43	70·92	22·09	0·55

Tuberculosis in Wales

Sir WILLIAM JENKINS asked the Parliamentary Secretary to the Board of Education if, in view of the report of the commissioners on tuberculosis in Wales, he would have an immediate survey made in all the schools of Wales by his medical advisers to ascertain what additional measures should be taken to ensure that all children were properly fed.—Mr. KENNETH LINDSAY replied : The adequacy of the provision of free meals and milk in all areas in Wales is already being reviewed by the Board of Education and letters recommending improvements in the arrangements have been sent to a considerable proportion of the local education authorities. Visits to several areas have been or will be made by the board's medical officers, at which the nutrition of children in typical schools is surveyed. The responsibility for surveying the schools as a whole rests, however, with the local education authorities and their medical officers, and it is the duty of my department to coördinate as far as possible the standards used in the assessment of nutrition and to supervise and stimulate the activities of the authorities rather than to replace them.

Dr. SUMMERSKILL asked the Minister of Health whether, in view of the recent report on tuberculosis in Wales and the revelation of the low standard of housing, he would take steps to make the appropriate county authorities take over the duties of the defaulting boroughs and submit a rehousing scheme for families living in overcrowded conditions.—Mr. ELLIOT replied : I am not yet in a position to make any statement on the recommendations contained in this report. As the hon. member will realise the report covers a great deal of ground and is at present under consideration. In the first place I am asking the Welsh Board of Health and local authorities in Wales for their observations. Meanwhile I am sure the House would like me to express the gratitude of all of us to the members of the committee, including one of our parliamentary colleagues, who have devoted so much time and attention to the investigation of these questions, and have produced so striking a report.

Dr. SUMMERSKILL : Does not the Minister think that in view of the fact that these inquiries have covered a period of two years, and that much of the work of rehousing is of such an urgent character, he ought to take action immediately ?—Mr. ELLIOT : It is clear that the report in several respects calls attention to the work of local authorities and I think it is desirable that local authorities whose actions have been questioned should have an opportunity of making representations.

Dr. SUMMERSKILL : Will the right hon. gentleman direct his attention to those parts which are described as being of such a shocking character that they are even worse than the slums of Shanghai ; and would he direct his personal attention to ameliorating the conditions in these particular places ?—Mr. ELLIOT : Yes, I have already done so. The rural housing conditions in Wales were the subject of a good deal of attention and last summer I went round the Welsh local authorities' areas myself and had special conferences to draw their attention to the exceptionally favourable terms now offered for rural housing.

Mr. J. GRIFFITHS : Since I gather that the right hon. gentleman's own inspectors have reported these conditions to the Ministry which are appalling, can he explain why no action was taken on the report of his inspectors before the report was published ?—Mr. ELLIOT : Yes, Sir, on certain things action was taken, such as improving conditions for rural housing. As to the rest of the matter I have made repeated representations to the local authorities.

Mr. GRIFFITHS : Since it is obvious that they have not carried out those recommendations, what other action is the Minister going to adopt ?

Sir F. FREMANTLE : Is it not rather early to expect local authorities to have done much under the Rural Housing Act which was passed only twelve months ago ?

No further reply was given.

Examination Tests for Nurses

Mr. LIDDALL asked the Minister of Health whether he would consult with the medical authorities, with a view to establishing two grades of state-registered nurses, as the present examination tests for nurses were not consonant with actualities and national requirements, and prevented many suitable persons from giving valuable service to the sick, and were therefore contrary to the interests of the public should an emergency arise.—Mr. ELLIOT replied : This is one of the matters under consideration in connexion with the interim report of the Interdepartmental Committee on Nursing Services which was recently published.

Sir J. LAMB : When is my right hon. friend likely to take action on the matter, because this delay is causing great irritation ?

Dental and Ophthalmic Treatment

Mr. JENKINS asked the Minister of Health whether he would consider the appointment of a departmental committee to consider and report on the advisability of making available dental and ophthalmic treatment to all members of national health insurance approved societies. —Mr. ELLIOT replied : The provision of dental benefit and ophthalmic benefit as statutory benefits available to all insured persons would require an increase in the weekly rates of contribution at present paid by insured persons and their employers, and would also involve a substantial increase in the amount payable from the Exchequer towards the cost of national health insurance. This is one of a number of suggested major extensions of the national health insurance and contributory pensions schemes which will have to be examined when the time is opportune and placed in an appropriate order of priority, due regard being had to the financial and other considerations involved. In the meantime I do not think it desirable that a special departmental committee should be appointed to investigate this particular suggested extension.

Mr. JENKINS : Is not the right hon. gentleman aware that there are quite a number of approved societies, particularly those whose members come from the heavy industries where the incidence of sickness is highest, which are unable to provide their members with these services, and will he see that they get equal treatment under national health insurance ?—Mr. ELLIOT : It is true that societies have made representations suggesting that other societies should assist them in this matter, which is a very difficult subject. I cannot undertake to see that agreement is reached.

Replying to a further question by Mr. Sutcliffe, Mr. ELLIOT said : Any estimate of the cost of providing dental benefit as a statutory benefit must necessarily be highly conjectural in the absence of reliable data as to the proportion of insured persons who would be likely to apply for treatment in the course of a year, and the average amount of treatment which would be required in each case to secure dental fitness. The average cost per case under the existing additional benefit arrangements is about £4 and the claim-rate is less than 10 per cent. of the persons eligible, but these figures bear little relation to the proportion of insured persons who might apply for treatment if a statutory benefit, including payment of the whole cost of treatment, were provided—a consideration which would probably also affect the average cost per case.

Aged Coroners and Retirement

Sir ARNOLD WILSON asked the Home Secretary whether he was aware that several coroners were 90 years of age ;

and whether he would consider, in the public interest, some means of encouraging them to end a career of public service by providing facilities for honourable retirement.—Mr. GEOFFREY LLOYD, under-secretary, Home Office, replied: Coroners are appointed by the local authority and my right hon. friend has no information as to the ages of coroners though he is aware that some of them are of an advanced age. As regards the second part of the question, I would refer my hon. friend to section 6 of the Coroners (Amendment) Act, 1926, which makes provision for the superannuation of county and borough coroners in the circumstances prescribed in that section.

Silicosis Schemes and the Three Years' Rule

Mr. JAMES GRIFFITHS asked the Home Secretary what action he proposed to take to deal with the injustices arising from the operation of the three years' rule under the Various Industries (Silicosis) Schemes.—Mr. GEOFFREY LLOYD: My right hon. friend is contemplating an extension of the three years' limit and is having draft schemes for that purpose prepared for consideration by the parties concerned. It will apply to various industries.

Aftercare of Discharged Prisoners

Dr. SUMMERSKILL asked the Home Secretary whether his attention had been drawn to the recent case of murder where the murderer, now proved to be of unsound mind, had already been sentenced for various other brutal attacks on young women; and what aftercare methods were adopted by the prison authorities to keep criminals of this kind under observation.—Mr. GEOFFREY LLOYD replied: The hon. member has been good enough to inform my right hon. friend of the case to which she refers in the first part of her question, but as the Home Secretary has recently ordered a medical inquiry into the mental condition of this prisoner I am unable at present to make any statement about this case. As regards the second part of the question, if a person undergoing detention is certified to be insane or mentally defective proper arrangements would, of course, be made for his care, but in the case of the prisoner in question his examination while he was in prison on a previous occasion showed that it was not possible so to certify him.

Dr. SUMMERSKILL: Is the hon. gentleman aware that the senior medical officer at Brixton and the medical officer at Wormwood Scrubs were both willing to certify this man, and in fact said that two other brutal attacks which he had made during the last two or three years were due to mental instability; and in view of the fact that Mahony is now only 23 years of age, and that the prison authorities have such a careful follow-up of prisoners, does not the hon. gentleman think that young prisoners of this kind should be kept under some kind of observation?—Mr. LLOYD: There are certain powers for keeping young prisoners under observation after they have left prison, but I was not aware of the detailed facts which the hon. member has mentioned. If my information is correct it was not possible to certify him.

TUESDAY, MARCH 21

Civil Servants and Vaccination

Mr. LEACH asked the Secretary to the Treasury whether applicants for posts in the civil service had still to make a statutory declaration of objection to vaccination or a written statement of objection, or whether unvaccinated applicants were admitted without being required to state their objection.—Captain EUAN WALLACE replied: In the case of established appointments to the home civil service, the civil service commissioners do not require a candidate to be vaccinated or to make a statutory declaration or written statement of objection to vaccination. In the case of posts abroad, the commissioners do not regard candidates as constitutionally fitted for appointment unless in the view of the medical examiner they are sufficiently protected against smallpox.

Evidence Before Welsh Anti-tuberculosis Committee

Mr. OWEN EVANS asked the Minister of Health if the evidence and memoranda submitted to the committee of inquiry into the anti-tuberculosis service in Wales would be published.—Mr. BERNAYS, parliamentary secretary to the Ministry of Health, replied: A neostyled copy of the evidence given before this committee was placed in the Library of the House on the 13th instant. My right hon. friend does not propose that the evidence should be printed.

INCORPORATED SOCIETY OF CHIROPODISTS

THE annual dinner of the society was held at the Trocadero restaurant, London, W., on March 18, with Mr. John H. Hanby in the chair. Dr. H. Letheby Tidy, proposing the toast of The Profession of Chiropody, said that great things had been happening to chiropody in recent years. He did not believe that the increase of their work was due to the type of shoes worn by the younger generation. A demand for all services that contributed to better health was widespread and it was through this demand that increased work would come to their craft. One difficulty of any specialised work was the risk of overlooking some condition which was outside its limits. It was inevitable that from time to time, however much care was taken, some such case would occur and might result in damages. But such isolated instances would reflect no discredit on the craft of chiropody or justify any change in the curriculum. Their work could never stand still; it must always progress and always change, and he hoped that to prevent disease would be among their aims. That involved careful record and observation and discussion of the conditions which came before them. Great work had been done by the society and all those who had fought for so long to bring it to its present position.

The Chairman, in reply, said that in the last two or three years their profession had emerged to a new status and new prospects. For twenty-five years their predecessors worked hard towards the goal which they had now obtained—namely, recognition by the medical profession and the full confidence of the public. No man, woman or child could be physically fit if suffering from disabilities of the feet, and the development of a scheme for chiropody treatment as a benefit under national health insurance would be of great advantage to the country. He hoped that the register of approved chiropodists, to be published in the next few months, would go far towards counteracting the ramifications of undesirable foot clinics which were springing up almost daily.

The Lord Mayor of London (Sir Frank Bowater), replying to the toast of The Guests, proposed by Dr. A. W. Oxford, said that he considered the examination of the feet, teeth and physical condition of school-children as done by the L.C.C. was of paramount importance if we were not to have a C.3 race.

". . . One reason the medical lecture has gone out of style is that there are no longer lecturers of the old type; researchers are seldom eloquent speakers. . . . To be oratorical it is necessary to deal only with the most superficial of facts, if any, as the politicians abundantly demonstrate, while the researcher must weigh each bit of evidence carefully. I give place to no man in the appreciation of the medical researcher, but his problems are not for the medical student. Researchers should be quarantined both for their own good and for the good of the student. I speak sympathetically, because I have dabbled in the border lines myself, but I have never mentioned them to my students. The fact should be recognized that the average doctor never does catch up with what the researcher is doing. We doctors should be spared the agony of the scientific delivery room and should be allowed to hold the baby only after the nurse has him all polished up and dressed."—From "The Horse and Buggy Doctor," by ARTHUR E. HERTZLER. London. 1939.

MEDICAL NEWS

University of Cambridge

On March 17 the following degrees were conferred :—

M.Chir.—D. B. McGavin.
M.B., B.Chir.—*F. A. Simmonds, E. K. Gardner, A. M. Thomas, and J. D. Wade.
M.B.—R. H. Dale and A. C. Fraser.

* By proxy.

The honorary degree of D.Sc. is to be conferred upon Sir Henry Dale, F.R.S., director of the National Institute for Medical Research.

University of Dublin

On March 15 the following degrees and licence were conferred :—

M.B., B.Ch., B.A.O.—J. W. Cathcart, E. R. Coetzee, Mary A. Conyngham, R. C. H. Cooke, M. O. Drury, C. J. Du Preez, L. A. S. Edmondson, Sylvia M. FitzGerald, T. W. Hanna, D. G. Harrison, F. R. T. Hollins, L. S. Levinson, R. A. Lutton, Rosaleen de C. McCormick, Bridget P. Mansfield, E. R. F. Mellon, F. P. O'Sullivan, William Sandford, R. J. Sandys, Boris Serebro, Simon Sevitt, E. N. O. Sodeinde, M. E. Tapissier, and L. I. Warnock.
L.Med., &c.—Noel McSharry.

Research Fellowships

Particulars of the following fellowships will be found in our advertisement columns this week :—

Fellowship in psychiatry.—The Child Guidance Council offers three fellowships, each of £300, tenable for a year for half-time work at their Islington clinic.

George Henry Lewes studentship.—This studentship is open to men and women and the student is expected normally to work in the department of physiology in the University of Cambridge.

Kathleen Schlesinger research fellowship.—The Medical Research Council invite applications for this fellowship which is usually tenable at the National Hospital, Queen Square. The fellow will devote his or her whole time to "investigating the origin and nature of cysts of the brain."

College of Nursing

At the meeting of the council on March 16 Miss B. Monk was re-elected president for 1939–40. It was announced that the Scottish board of the college, which has moved to 40, Melville Street, Edinburgh, 3, is now the body responsible for compiling and maintaining the central register of trained and assistant nurses for Scotland. Five bursaries of £20 each are to be awarded to members or ex-members of the Student Nurses' Association for postgraduate work. The council agreed to reaffirm their support of the principle that qualified sister tutors be included as teachers of anatomy, physiology, and hygiene in the proposed prenursing courses for the first part of the preliminary state examination.

Conference on Nutrition

A conference on the wider aspects of nutrition will be held by the British Medical Association at B.M.A. House, Tavistock Square, London, W.C.1, from April 27 to 29. Sir Arthur Salter will deliver an inaugural address, and Prof. E. P. Cathcart, F.R.S., Sir Robert McCarrison, F.R.C.P., and Dr. G. P. Crowden will speak on medical aspects of nutrition. At the afternoon session Lord Astor will open a discussion on means of stimulating production from the point of view of home agriculture, and other speakers will be Mr. Anthony Hurd, agricultural correspondent of the *Times*, and Prof. W. C. Miller, Courtauld professor of animal husbandry at the Royal Veterinary College. Mr. F. L. McDougall, economic adviser in London to the Government of the Commonwealth of Australia will speak for overseas producers. The stimulation of consumption by family allowances and the provision of cheap or free milk or meals in necessitous cases will be discussed next day by Mr. L. S. Amery, M.P., Mr. L. J. Cadbury, Sir Kenneth Lee, and Dr. Stella Churchill. On the last day of the meeting Mr. W. O. Lester Smith, director of education for Manchester, and Prof. V. H. Mottram, professor of physiology in the University of London, will describe the importance of education as a means of increasing consumption. At 8.15 P.M. on April 28 Prof. Mottram will deliver the Sir Charles Hastings public lecture of the association. He will speak on nutrition and the public health. Further information may be had from the secretary of the association.

University of Sheffield

The honorary degree of D.Sc. will be conferred on Prof. Miles Phillips at a congregation on July 1.

King's College Hospital, London

The next meeting of the Listerian Society will be held on March 29 at 8.30 P.M., when Dr. Wilfrid Sheldon will deliver his presidential address.

Local Medical and Panel Committee for the County of London

The offices of this committee will be removed on Monday, March 27, to Tavistock House (South), Tavistock Square, W.C.1.

King Edward's Hospital Fund for London

A series of privileged visits to places of historic interest has been arranged in aid of this fund. The programme includes visits to St. James's Palace (April 19); the Houses of Parliament (April 26); the Tower of London (May 10); Windsor Castle (May 19); and the Royal Naval College, Greenwich, and the National Maritime Museum (May 26). Further details of the arrangements may be had from the secretary of the fund, 10, Old Jewry, London, E.C.2.

European Mental Hygiene Reunion

The sixth European Mental Hygiene Reunion will take place at Lugano, Switzerland, from June 4 to 6. The conference of the Swiss Psychiatric and Neurological Societies will be held during the preceding two days. The main theme of the discussions at the reunion will be mutual understanding and mental hygiene, and the speakers will include Dr. Emanuel Miller and Dr. G. R. Hargreaves. Those who wish to enrol are asked to write to the secretary of the National Council for Mental Hygiene, 76, Chandos House, Palmer Street, London, S.W.1, who will furnish full particulars of the programme and arrangements.

Royal Society

The following have been elected to the fellowship of the society: G. S. Adair, assistant director of research in physiology, University of Cambridge; C. H. Andrewes, M.D., pathologist at the National Institute for Medical Research; Max Born, Sc.D., Tait professor of natural philosophy, University of Edinburgh; A. J. Bradley, assistant director of research in crystallography, Cavendish Laboratory, Cambridge; David Brunt, professor of meteorology, Imperial College of Science and Technology, University of London; F. A. E. Crew, M.D., Buchanan professor of animal genetics, University of Edinburgh; F. W. Edwards, Sc.D., deputy-keeper of entomology, British Museum; B. M. Jones, Mond professor of aeronautical engineering, University of Cambridge; G. W. C. Kaye, D.Sc., superintendent of the physics department of the National Physical Laboratory; E. G. T. Liddell, D.M., fellow of Trinity College and lecturer in physiology, University of Oxford; E. J. Maskell, Ph.D., lecturer in plant physiology, University of Cambridge; Irvine Masson, D.Sc., vice-chancellor of the University of Sheffield, formerly professor of chemistry in the University of Durham; C. E. K. Mees, vice-president of the Eastman Kodak Company, Rochester, N.Y.; M. H. A. Newman, lecturer in mathematics, University of Cambridge; H. H. Read, D.Sc., professor of geology, Imperial College of Science and Technology, University of London; Sir Reginald Stapledon, professor of agricultural botany and director of the Welsh Plant Breeding Station, Aberystwyth; H. M. Turnbull, D.M., professor of morbid anatomy in the University of London and director of the Bernhard Baron institute of pathology at the London Hospital; E. E. Turner, D.Sc., head of the department of organic chemistry, Bedford College, University of London; V. B. Wigglesworth, M.D., reader in medical entomology, London School of Hygiene and Tropical Medicine; and E. J. Williams, D.Sc., professor of physics, University of Wales, Aberystwyth.

County of London

Colonel P. H. Mitchiner, C.B.E., F.R.C.S., K.H.S., has been appointed a deputy lieutenant for the county.

General Medical Council

At a meeting of the executive committee of the General Medical Council, held on Feb. 27, it was reported that the names of Alexander Lane and Stephen Somogyi had been restored to the Medical Register after non-penal removal.

It was resolved that the degrees of M.D. and M.S. Lucknow, M.S. Madras, and M.D., M.S. Patna should for the time being be recognised as registrable in the colonial list of the register.

International Association for the Prevention of Blindness

The general assembly of this association will be held at 1, Wimpole Street, London, W.1, at 2.30 P.M. on Wednesday, April 19, under the presidency of Dr. P. Bailliart. Dr. A. H. H. Sinclair (Edinburgh) will open a discussion on the application of the Credé method for the prevention of ophthalmia neonatorum in various countries. Other speakers will include Dr. R. P. Wilson (Egypt), Prof. F. Terrien (France), Prof. von Szily (Germany), Dr. J. D. M. Cardell (Great Britain), Prof. L. Maggiore (Italy), Dr. Conrad Berens (United States), and Prof. A. Vasquez Barrière (Uruguay). A film on preventive measures against industrial eye injuries will also be shown. Further information may be had from the secretariat of the association 66, boulevard Saint-Michel, Paris, VI.

Royal Society of Medicine

A medical week is to be held from April 24 to 29 for the benefit of fellows of this society who live out of London. Clinical meetings will be held by the section of medicine at Guy's Hospital, by the section of neurology at the National Hospital, Queen Square, and by the section of physical medicine at the London Hospital. The clinical section will hold a meeting at which cases will be shown, and the sections of disease in children and of urology will also meet. Prof. Robert Bradlaw will read a paper on dental innervation to the section of odontology, and Mr. G. L. Pepler, chief town-planning inspector of the Ministry of Health, will speak on town and country planning to the section of epidemiology and state medicine. The section of pathology hope that Dr. H. E. Robertson (Mayo Clinic) will address them on the significance of residual lesions of the stomach. Further information may be had from the secretary of the society, 1, Wimpole Street, London, W.1.

Red Cross Clinic for Rheumatism

The ninth annual report of the British Red Cross Society's clinic for rheumatism shows a deficit of £4000 on the year's working, as against an average yearly deficit of £1750. The total accumulated deficit on Dec. 31, 1938, amounted to £10,400; but negotiations now being carried on may lead to much benefit in this respect. The average cost of each general patient attendance was *5s. 2d.*, of which treatment accounted for *9·7d.* The number of patients seeking early treatment continues to increase; but the total number of attendances slightly diminished, owing partly to the international crisis of last September (during which no new applications were received and some appointments were not kept), partly to repairs, and partly to congestion. Steps have since been taken to prevent congestion of the treatment-rooms by patients who can derive but little benefit or can be suitably treated elsewhere. The massage treatments given during the year numbered 84,624 and the baths 43,851. The results of completed treatment in 2199 cases are given as 35 per cent. free from subjective symptoms, 51 per cent. definitely improved, 13 per cent. unchanged or only slightly improved, and 1 per cent. worse. The London County Council has set aside six beds for rheumatic patients at St. Stephen's Hospital, and six beds at St. Peter's Hospital, Kilburn, have been offered for women suffering from chronic rheumatoid arthritis. Otherwise there are very few facilities for the treatment of rheumatic inpatients, and it is stated that there is as yet no place where a patient can obtain prolonged rest and treatment during convalescence.

Empire Rheumatism Council

A meeting at which the Duke of Gloucester will speak is to be held in support of this council at the Mansion House, London, on April 25 at 3.30 P.M.

Postgraduate Course for Insurance Practitioners

An afternoon course of postgraduate study for London insurance practitioners will begin at the British Postgraduate Medical School, Hammersmith, next month. The course will meet on Tuesdays and Fridays from April 18 to July 7 from 2 to 4.30 P.M. Twenty-two practitioners will be invited to attend, and if the experiment is a success the scheme may be extended.

A Danish Health Exhibition

The prime minister of Denmark last week opened a popular health exhibition in Copenhagen. By arrangement with the Central Council of Health Education, the "Fitter Britain" exhibits from the Glasgow Exhibition have been taken over to Copenhagen. There are also exhibits from Germany.

Food Education Society

On April 19, at 8 P.M., Dr. E. C. Pillman-Williams, lecturer in biochemistry at the Royal Free Hospital, will speak to this society on diet in rheumatism. On April 26, at 8 P.M., Sir Albert Howard, formerly director of the institute of plant industry, Indore, will deliver the Bircher-Benner memorial lecture. His subject will be health, nutrition and soil fertility. Both lectures will be held at the London School of Hygiene, Keppel Street, W.C.1. Further information may be had from the secretary of the society, Gordon House, 29, Gordon Square, London, W.C.1.

Preservation of Child Life

In the Chadwick lecture which he delivered on this subject on March 14 Dr. J. B. Howell, medical officer of health for Hammersmith, reminded his audience that although there had been an enormous saving in the lives of children since the beginning of this century there were still every year in England and Wales 35,175 deaths in the first year of life. With the 24,806 stillbirths which occurred annually this made a potential loss of 59,981 lives. The reduction which has been effected in the death-rate has been in the last eleven months of the first year of life; in the neonatal period it has remained almost unchanged. Of the 35,000 deaths under one year in 1937, 18,168 were in the first month, and of these 6607 were on the first day. Dr. Howell thought that the fact that more deaths occurred in the first month than in all the next eleven months suggested that the difficulty was obstetric in origin.

Moorfields Dinner

The annual dinner of past and present students of the Royal London Ophthalmic (Moorfields) Hospital took place on March 9. Mr. A. F. MacCallan, who was in the chair, proposed the toast of The Hospital and Medical School, and Mr. Theodore Luling, the chairman of the hospital, and Mr. Charles Goulden, the dean of the medical school, replied. Mr. Goulden said that during 1937–38 one hundred and four new students had joined and there were seventy-five students who remained from the previous year. The school had lost through retirement Mr. Affleck Greeves, Mr. Rupert Scott, and Mr. H. B. Stallard; Mr. C. D. Shapland, Mr. J. H. Doggart, and Mr. Harold Ridley had been elected in their place, and Mr. A. B. Goldsmith had been appointed curator and pathologist. One important change about to take place was the appointment of a full-time pathologist, with the aid of funds provided by the lay management of the hospital, supported by a grant from the school. At the D.O.M.S. examination, of the 57 successful candidates 29 were students at the school, and in the second part, of 67 successful candidates 46 had studied at Moorfields. At the D.O. examination of the University of Oxford, of 18 successful candidates 10 were students of the school. Two students had also obtained the F.R.C.S.E. in ophthalmology.

The toast of The Guests was proposed by Mr. M. H. Whiting and Sir Adolphe Abrahams replied. The health of the chairman was proposed by Mr. F. A. Juler.

National Fitness Campaign

The Central Council of Recreative Physical Training have arranged summer holiday courses for leaders of outdoor and indoor recreation. A three months' residential course for men will be held at Loughborough College, Leicestershire, from April to July. There will also be summer schools for women at Milton Mount, Crawley, from July 31 to Aug. 11; and at Harrogate College, Yorkshire, from Aug. 14 to 26. Summer camps for men will be held at Kingstanding, Staffordshire, from July 29 to Aug. 10; at Heswall, Cheshire, from Aug. 26 to Sept. 2; and at a southern centre not yet selected from Aug. 12 to 19. Further particulars may be had from the organising secretary of the council, Abbey House, Victoria Street, London, S.W.1.

Royal Westminster Ophthalmic Hospital

Lord Mersey, chairman of the committee of management, at its annual general meeting on March 16, said that the hospital had experienced an extremely difficult year, especially during the critical period in September, but he was pleased to say that the ordinary income had increased by £1000, and the total was only down by about £6. There had been a considerable increase in the number of patients, and a big demand upon special departments such as the orthoptic for the treatment of squint, and the electrotherapeutic department. Mr. P. McG. Moffatt and Mr. A. S. Philps had been elected assistant surgeons, and the Sir Richard Cruise clinical research scholarship had been awarded to Mr. J. D. Martin-Jones, registrar of the hospital, who had already submitted two interim reports on intra-ocular cancer. Lord Mersey announced that in the event of war the hospital would be taken over by the borough of Holborn as a first-aid station for air-raid casualties, and the hospital staff and equipment would be attached as an eye unit to a base hospital outside London.

Medical Diary

March 27 to April 2

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.
MONDAY.
Odontology. 8 P.M., clinical meeting.
TUESDAY.
Medicine. 8.30 P.M., Dr. L. E. H. Whitby, Dr. G. J. Langley, and Dr. W. F. Gaisford: Recent Advances in the Treatment of Pneumonia.

MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1.
MONDAY.—8.30 P.M., Prof. Edwin Bramwell, Mr. R. Foster Moore, and Dr. Anthony Feiling: The Ocular Manifestation of General Disease.

TUBERCULOSIS ASSOCIATION.
THURSDAY.—2.30 P.M. (St. John's College, Cambridge), Prof. Sebrechts (Bruges): Apicolysis with Plombage by the Pectoral Muscles in the Surgical Treatment of Giant Cavities. 4.30 P.M., Dr. E. T. W. Starkie, Dr. T. W. Davies, and Dr. A. Brownlee: Problem Cases.
FRIDAY.—9.45 A.M., Mr. N. R. Barrett: Tuberculosis of the Thoracic Wall. 11.15 A.M., Dr. F. R. G. Heaf: How far should the State consider the Individual in Planning a Tuberculosis Scheme?
SATURDAY.—9.45 A.M., Dr. Brian Thompson and Mr. E. S. Evans: Tuberculous Cervical Adenitis. 11 A.M., Mr. R. Scott Stevenson: Radiology of the Larynx.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

SOCIETY OF APOTHECARIES OF LONDON, Water Lane, E.C.4.
WEDNESDAY.—9 P.M., Dr. D. Evan Bedford: Left Ventricular Failure. (Joseph Strickland Goodall lecture.)

UNIVERSITY OF BIRMINGHAM.
TUESDAY.—4 P.M. (Queen Elizabeth Hospital), Dr. J. M. Smellie: Infantile Diarrhœa. (Ingleby lecture.)

UNIVERSITY OF GLASGOW.
TUESDAY.—4.30 P.M. (Tennent Memorial Building, Church Street), Dr. John Marshall: The Eye and Vitamin Deficiency.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.
TUESDAY.—4.30 P.M., Dr. C. M. Hinds Howell: Syphilis of the Nervous System.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 3 P.M., clinical and pathological conference (surgical).
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological conference. 3.30 P.M., Dr. T. N. MacGregor: Functional Uterine Bleeding.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology).
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

NATIONAL HOSPITAL, Queen Square, W.C.1.
MONDAY.—3.30 P.M., Dr. C. P. Symonds: Cerebral Tumours (3).
TUESDAY.—3.30 P.M., Dr. J. Purdon Martin: Acute Infective Diseases of the Brain.
WEDNESDAY.—3.30 P.M., Dr. F. M. R. Walshe: clinical demonstration.
THURSDAY.—3.30 P.M., Dr. Denis Brinton: Vascular Disease of Central Nervous System.
FRIDAY.—3.30 P.M., Mr. F. A. Williamson-Noble: Optic Atrophy.
Outpatient clinic daily at 2 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.
THURSDAY.—2 P.M., Mr. T. Twistington Higgins: Hypertrophic Pyloric Stenosis. 3 P.M., Mr. James Crooks: Diseases of the Nose and Accessory Air Sinuses.
Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

ST. GEORGE'S HOSPITAL, S.W.1.
THURSDAY.—5 P.M., Dr. Anthony Feiling: neurological demonstration.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL, N.W.3.
WEDNESDAY.—4 P.M., Dr. E. Rohan Williams: Radiological Study of the Gall-bladder.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn Road, W.C.1.
FRIDAY.—4 P.M., Mr. J. D. McLaggan: Injuries to the Nose and Face.

ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, 42, Ranelagh Road, S.W.1.
FRIDAY.—3.30 P.M., demonstration of teamwork in the rheumatic diseases by members of the staff.

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.
MONDAY to SUNDAY.—BROMPTON HOSPITAL, S.W.3, Tues. and Fri., 5.15 P.M., M.R.C.P. course in chest diseases.—CHELSEA HOSPITAL FOR WOMEN, Arthur Street, S.W.3, all-day course in gynæcology.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1, afternoon M.R.C.P. course in neurology.—MEDICAL SOCIETY OF LONDON, 11, Chandos Street, W.1, Mon., Wed., and Fri., 5.15 P.M., primary F.R.C.S. physiology course.—BRITISH LEGION HEADQUARTERS, 25, Eccleston Square, S.W.1, Thurs., 8.30 P.M., lecture on Surgical Treatment of Pulmonary Tuberculosis.—PRINCESS ELIZABETH OF YORK HOSPITAL, Shadwell, E.1, Sat. and Sun. course in children's diseases.

MANCHESTER ROYAL INFIRMARY.
FRIDAY.—4.15 P.M., Mr. R. L. Newell: surgical cases.

LEEDS GENERAL INFIRMARY.
TUESDAY.—3.30 P.M., Mr. W. R. Henderson: demonstration of neurosurgical cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.
WEDNESDAY.—4.15 P.M. (Western Infirmary), Dr. J. G. Macgregor-Robertson: Venereal Disease in Men.

Appointments

ARMSTRONG, J. R., M.D. Belf., F.R.C.S., registrar at the fracture clinic and orthopædic department of Charing Cross Hospital, London.
*COHEN, H. M., M.D. Lpool, D.P.H., school medical officer for Sheffield.
DOUGLAS, SHOLTO, M.B. Dubl., D.M.R.E., assistant radiologist to St. Anne's Skin and Cancer Hospital, Dublin.
ERSKINE, DAVID, M.D., D.P.H., hon. dermatologist to the Dreadnought Seamen's Hospital, London.
GLASS, MARGARET A., M.B. Glasg., D.P.H., assistant medical officer of health for Southall.
GREENING, W. P., M.R.C.S., surgical registrar at Charing Cross Hospital, London.
HAY, J. D., M.D. Lpool, M.R.C.P., hon. assistant physician to the Royal Liverpool Children's Hospital.
HOCKEN, M. E., M.B. Glasg., D.P.H., deputy county medical officer of health for Herefordshire.
MCCASH, MARGARET S.L., M.D. Glasg., senior assistant maternity and child welfare officer for Stoke-on-Trent.
MORLEY, M. R., M.B.N.Z., F.R.C.S.E., medical superintendent at the Tilbury Seamen's Hospital.
MURRAY, G. B., M.B. Edin., D.P.H., medical officer of health for Chingford.
RIPPINER, H. A., M.B. Edin., F.R.C.S.E., M.R.C.O.G., junior obstetrician and gynæcologist at the Municipal General Hospital, Bradford.
SALISBURY, C. V., F.R.C.S.E., resident medical officer at the City of London Maternity Hospital.
SUMMERHILL, J. H. E., M.R.C.S., assistant resident medical officer at the City of London Maternity Hospital.
SUTHERLAND-RAWLINGS, ERIC, M.R.C.S., hon. physician to the Western Skin Hospital, London.

* Subject to confirmation.

WALMSLEY, G. H. C., M.B. Manc., D.P.H., assistant county medical officer for Dorset.

WINGFIELD, A. L., M.D. Lond., M.R.C.P., physician with charge of outpatients to the Dreadnought Seamen's Hospital, London.

Examining Surgeon under the Factories Act, 1937: Dr. W. SHIPTON (Buxton District, Derby).

Medical Referees under the Workmen's Compensation Act, 1925: Dr. Z. M. H. Ross of Fulwell, Sunderland, and Dr. W. G. WAUGH of Sunderland, for the Seaham Harbour and Sunderland County Court Districts (Circuit No. 1) and the Durham County Court District (Circuit No. 2).

Vacancies

For further information refer to the advertisement columns

Army Dental Corps.—Dental surgeons.

Ashford, Kent, Grosvenor Sanatorium.—Second asst. res. M.O., £250. Also res. H.P., at rate of £100.

Aylesbury, Bucks Mental Hosp., Stone.—Asst. M.O., £350.

Bedford County Hosp.—Sen. H.S., and Cas. O., each at rate of £150.

Belgrave Hosp. for Women, Clapham Road, S.W.9.—Two H.P.'s, and H.S., each at rate of £100.

Birmingham City, Maternity and Child Welfare Dept.—Temp. M.O.'s, £10 per week.

Bradford, Municipal General Hosp., St. Luke's.—Med. supt., £1100.

Bradford City.—Asst. school M.O., £500.

Bradford Royal Infirmary.—Two H.P.'s and five H.S.'s, each at rate of £150.

Brighton, Royal Sussex County Hosp.—Cas. H.S., £120.

Burnley County Borough.—Asst. M.O., £500.

Bury County Borough.—Asst. M.O.H., £500.

Cambridge, Addenbrooke's Hosp.—H.P., at rate of £130. Also hon. surgeon.

Cambridge, Department of Physiology.—George Henry Lewis studentship, £250.

Colchester, Essex County Hosp.—Asst. H.S., £120.

Croydon General Hosp.—Cas. H.S., £125.

Doncaster County Borough Council.—Consultant obstetrician and gynæcologist, £775.

Doncaster Royal Infirmary.—Res. surg. O., and orthopædic H.S., at rate of £250 and £150 respectively.

Dudley Guest Hosp.—Cas. H.S., £150.

Edgware, Middlesex, Redhill County Hosp.—Res. cas. M.O., at rate of £350. Also two jun. asst. M.O.'s, each at rate of £250.

Exeter, Wonford House Registered Hosp.—Asst. M.O., £350.

Exeter City Mental Hosp.—Med. supt., £750. Also asst. M.O., £400.

Guildford, Royal Surrey County Hosp.—H.P. and cas. O., at rate of £150.

Hornsey Borough.—Temporary part-time M.O., £400.

Hosp. for Consumption, &c., Brompton, S.W.3.—Res. surg. O., £150. Asst. res. M.O., at rate of £150. Also three H.P.'s, each at rate of £50.

Hosp. of St. John and St. Elizabeth, 60, Grove End Road, N.W.8. Res. H.S., at rate of £75.

Hull Royal Infirmary.—Second H.S., at rate of £150.

Ilford, King George Hosp.—Res. anæsthetist, at rate of £150.

Iraq Government.—Asst. port health officer, 70 dinars a month.

Lancaster, Royal Albert Institution for the Feeble-minded.—Res. jun. asst. M.O., £375.

Leicester Royal Infirmary.—Radiotherapeutist, £500. Also hon. asst. surgeon, 100 guineas.

London Chest Hosp., Victoria Park, E.2.—H.P., at rate of £100. Also physician to inpatients.

London Child Guidance Clinic, 1, Canonbury Place, N.1.—Three Fellowships in Psychiatry, each £300.

Lindsey County Council, &c.—Obstetric and gynæcological consultant, £700.

Manchester, Baguley Sanatorium.—Jun. asst. M.O., at rate of £250.

Manchester Ear Hosp., Grosvenor Square.—H.S., at rate of £150.

Manchester Northern Hosp., Cheetham Hill Road.—Res. surg. O., at rate of £200.

Manchester Royal Children's Hosp., Pendlebury.—Asst. M.O. to outpatients' dept., at rate of £150.

Manchester Royal Infirmary.—Two H.S.'s to spec. depts., each at rate of £50.

Medical Research Council, 38, Old Queen Street, S.W.1.—Kathleen Schlesinger research fellowship, £300.

Metropolitan Hosp., Kingsland Road, E.8.—Sen. and jun. H.P.'s and H.S.'s, each at rate of £100.

Middlesex Hosp., W.1.—Res. M.O., £400.

National Hosp. for Diseases of the Heart, Westmoreland Street, W.1.—Res. M.O., and outpatient M.O., at rate of £150 and £125 respectively.

Newcastle-upon-Tyne City and County.—Maternity officer, £800.

Newcastle-upon-Tyne, Royal Victoria Infirmary.—Jun. surg. reg., £150.

Newport County Borough.—Asst. M.O.H., £600.

North Riding of Yorkshire County Council, &c.—M.O.H. and asst. to county M.O.H., £800.

Norwich City.—Asst. M.O.H. and asst. school M.O., &c., £600.

Oldham Royal Infirmary.—Sen. H.S., at rate of £250–£300.

Paddington Green Children's Hosp., W.2.—H.P., and H.S., each at rate of £150.

Plymouth City and Port.—Asst. M.O.H., £500.

Portsmouth, Saint Mary's Hosp.—Jun. asst. res. M.O., £250.

Portsmouth and Southern Counties Eye and Ear Hosp., Pembroke Road.—H.S., £150.

Preston and County of Lancaster, Queen Victoria Royal Infirmary. H.S. to eye and ear, nose and throat depts., at rate of £150.

Princess Beatrice Hosp., Earl's Court, S.W.5.—Hon. clin. asst. to outpatients' dept.

Queen Mary's Hosp. for the East End, Stratford, E.15.—Registrar to ear, nose and throat dept., 50 guineas.

Royal Army Medical Corps.—Commissions.

Royal Eye Hosp., St. George's Circus, S.E.1.—Refractionist to L.C.C. children's dept., and clin. asst., £80 and £20 respectively.

Royal Naval Medical Service.—M.O.'s.

St. Albans County Institution, Oster House.—H.S., £175.

St. Bartholomew's Hosp., E.C.1.—Physician-accoucheur.

St. John's Hosp., Lewisham, S.E.13.—Orthopædic registrar, 35 guineas.

St. Thomas's Hosp.—Asst. director of radiotherapy. Also sen. and jun. radiologists, £600 and £400 respectively.

Southend Municipal Hosp.—Asst. M.O., £325.

Southend-on-Sea General Hosp.—Res. obstet. officer, at rate of £100.

Stockton-on-Tees, Durham County Mental Hosp.—Locum tenens asst. M.O., 1 guinea a day.

Stoke-on-Trent, North Staffordshire Royal Infirmary.—H.S. to orthopædic dept., at rate of £150.

Swanley, Kent, Hosp. Convalescent Home, Parkwood.—Res. M.O., at rate of £200.

Swansea County Borough.—Asst. M.O.H. and asst. school M.O., £500.

Swansea General and Eye Hosp.—Cas. O., at rate of £150–£175.

Tilbury Hosp., Essex.—H.S., at rate of £140.

Ventnor, Isle of Wight, Royal National Hosp. for Consumption, &c. Asst. res. M.O., at rate of £250.

Victoria Hosp. for Children, Tite Street, Chelsea, S.W.3.—Ophth. surgeon and second orthopædic surgeon. Also cas. O., at rate of £200.

West Bromwich, Hallam Hosp.—Two asst. M.O.'s, each at rate of £200.

West London Hosp., Hammersmith, W.6.—Res. cas. O., at rate of £100. Also asst. physician.

Woolwich and District War Memorial Hosp., Shooters Hill, S.E.18. Res. med. reg. and res. pathologist, at rate of £150.

The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Daventry (Northampton) and Oldham, East (Lancashire).

Births, Marriages and Deaths

BIRTHS

ANTHONY.—On March 13, at Takapuna, Auckland, New Zealand, the wife of Surgeon Commander R. G. Anthony, R.N.—a son.

CONYERS.—On March 18, in York, the wife of Mr. J. H. Conyers, F.R.C.S.—a son.

FAGGE.—On March 20, at Braintree, the wife of Dr. C. Hilton Fagge—a son.

FAISON.—On March 13, in Edinburgh, the wife of Dr. J. B. Faison—a son.

HEATHCOTE.—On March 18, the wife of Dr. A. A. Heathcote, Newport, Isle of Wight—a son.

HEWLINGS.—On March 9, at Banbury, the wife of Dr. Pat Hewlings—a daughter.

KEMPTHORNE.—On March 18, at Simonstown, South Africa, the wife of Surgeon Lieut.-Commander H. de B. Kempthorne, R.N.—a daughter.

MCDOWALL.—On March 14, at Emsworth, the wife of Dr. E. B. McDowall—a son.

MORLEY.—On March 18, at St. John's Wood, N.W.8, the wife of Dr. H. Seaward Morley—a son.

NICOL.—On March 19, at Llandudno, the wife of Dr. A. Sinclair Nicol—a daughter.

PRIEST.—On March 17, at Collingham Gardens, S.W.5, the wife of Dr. W. H. Dickinson Priest—two sons.

ROBERTS.—On March 18, the wife of Dr. O. W. Roberts—a daughter.

ROSE.—On March 13, at Langho, near Blackburn, the wife of Dr. D. J. Rose—a daughter.

MARRIAGES

O'MALLEY—POINTON.—On March 18, at St. Ambrose's Church, Kidderminster, Peter O'Malley, M.B., to Mabel Margaret Pointon.

DEATHS

CAIRNS.—On March 15, at Northampton, Thomas Cairns L.R.C.P.I., aged 70.

CUMBERLIDGE.—On March 20, at Leicester, William Isaac Cumberlidge, M.B. Camb., F.R.C.S.

DAMER-PRIEST.—On March 16, at Rhayader, James Damer-Priest, M.R.C.S., L.S.A., late of Waltham Abbey and Eastbourne, aged 81.

JOHNSON.—On March 17, at Heathgate, N.W.11, Harold Jossé Johnson, O.B.E., M.B. Lond., aged 80.

JOYCE.—On March 18, at Reading, James Leonard Joyce, F.R.C.S., aged 57.

LANGFORD-JONES.—On March 18, at Whetstone, Robert Percival Langford-Jones, M.B. Lond., aged 47.

LUNN.—On March 18, in London, Sir Henry Simpson Lunn, M.D. Dubl., aged 79.

O'CONNOR.—On March 15, at Monte Carlo, Lieut.-Colonel Patrick Fenelon O'Connor, C.B., M.D. R.U.I., I.M.S. (retd.), aged 89.

RISIEN RUSSELL.—On March 20, at Wimpole Street, W.1, J. S. Risien Russell, M.D. Edin., F.R.C.P.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

SULPHANILAMIDE AND WAR WOUNDS

THE surgical treatment of infected wounds will often henceforth be combined with chemotherapy. In Spain d'Harcourt, Folch Pi, and Oriol have treated with sulphanilamide 13 patients whose wounds had led to septicæmia and for whom nothing further could be done in the way of local treatment (*Rev. Sanidad Guerra*, July-August, 1938, p. 246). Of these, 8 made a complete recovery, 2 died, and 3 were still under treatment at the time of the report. Most of the wounds were due to shrapnel, and two of them included open pneumothorax with hæmothorax. One of these produced a pure culture of streptococcus; costal resection and pleurotomy were performed, and the patient was in a very bad condition. Sulphanilamide was given, and in three weeks from admission to hospital he was completely cured of infection and on the way to resuming a normal life. The other patient likewise had a streptococcal infection of the hæmothorax and made a similar recovery under sulphanilamide therapy. These two cases are interesting because the cure of a hæmothorax infected by streptococci is ordinarily very difficult. The authors also report a rapid recovery from subperitoneal cellulitis due to an infected inguinal hernia. Three cases of gas gangrene, from each of which was cultured *B. perfringens*, were also treated with sulphanilamide, one patient being cured and two dying. The two who died had received multiple injuries, including several fractures, and one of them had begun to improve and was progressing well when he fell out of bed in his sleep, doing much damage to his immobilised limbs, from which he died.

D'Harcourt and his co-workers gave the drug by mouth and suggest a dose of 1 gramme three or four times a day for the first 4–6 days, and then only two doses a day for a much longer time. With each dose they also gave the patient Vichy water and 1 gramme of bicarbonate. The dosage was controlled by repeated estimations of sulphanilamide in the blood. The complications observed included a severe case of jaundice; but they did not withdraw the drug, and the patient survived. Occasionally there was diarrhœa or vomiting, which disappeared when the drug was temporarily withdrawn. Since it has been stated that anæmia is a contra-indication to sulphanilamide therapy, the present authors emphasise that most of their patients were very anæmic on account both of their wounds and their hæmolytic streptococcal infection, and that they observed no ill effects on the blood—no increase of anæmia, no hæmoglobinæmia, and no agranulocytosis. The lack of such complications they attribute to the fact that they gave blood-transfusions repeatedly.

THE ESCAPE INTO PSYCHOSIS

AT a meeting of the Medical Society of Individual Psychology on March 9, with Dr. H. C. Squires in the chair, Dr. R. D. Gillespie remarked that the idea of mental illness as a flight or escape had captured the popular imagination. The conception was simple and sometimes fairly accurate. In so far as it fitted in with the more general conception of mental illness as a failure of adaptation it was scientific; but in so far as it implied purpose it was much less obviously so. A purpose had to be the purpose of something. Purpose was easier to understand as a function of the ego; but in many a psychosis it was emphatically not the ego that was responsible. In fact the impression obtained from the psychotic mental content was more often that of the ego being overwhelmed by something foreign to it than of the ego's willing "escape" from anything. In such cases the ego looked on helplessly; if escape were possible it would be from the surging inner pressure of emotions and desires, but the latter would out, and reality was not so much escaped from as supplanted. There were two kinds of reality, one outer and one inner, one public and one private. The ego had been well said to face two ways: outwards to the external world and inwards towards the innate impulses and desires, some of them acknowledged, some of them not. Mental escape therefore had to be considered as an escape from external and from internal reality. Possibly only the former might rightly be called psychotic.

RAILWAY TRANSPORT FOR INVALIDS

WHEELED chairs, stretchers, and special trains have long been available for invalids wishing to travel by rail, as every medical practitioner surely knows; but the extent of facilities for invalids is not perhaps generally realised. For instance, the Great Western Railway informs us that it maintains a stock of special saloons each fitted with a couch suspended from the roof to avoid oscillation, together with accommodation for nurses and cooking apparatus for the preparation of food on the journey. These coaches have large double doors, so that the patient can be lifted straight out of an ambulance into the train.

The same company has also adopted the Parratt stretcher, invented by a carriage cleaner of that name at Taunton, as we noted in 1934. This stretcher is intended to provide a "bed to bed" service between home and hospital. It can be lifted in and out of an ordinary railway compartment or ambulance and rests along one seat, leaving the other free for an attendant or relation. It can also be fitted to an ordinary stretcher, and its handles can slide in flush with the ends of the stretcher to negotiate awkward corners and stairways.

COBRA VENOM FOR DYSMENORRHŒA

THE venom of the cobra *Crotalus terrificus* has been used by H. Duék in the treatment of dysmenorrhœa (*Hora med.* December, 1938, p. 65). It was given mainly in the premenstrual period but also occasionally in the intermenstrual period if the patient complained of excessive pain. Its effects were noticeable some 6–8 hours after intradermal injection, and after about three months' treatment the dysmenorrhœa was improved in the eight cases reported. The treatment, however, is only palliative. No toxic effects were observed, and the patients continued at their ordinary work.

THE DEATH OF CLAUDIUS

Dr. PARKES WEBER writes: In my remarks at the Medical Society of London reported in your last issue (p. 635) I referred not (as you say) to the death of Nero but to that of the Emperor Claudius I, A.D. 54. According to Tacitus the Empress Agrippina junior (mother of Nero) was supposed to have poisoned him. Rumour suggested that the court-physician Xenophon, of Cos, pretending to assist Claudius to vomit, introduced fresh poison on the quill with which he tickled the fauces. Claudius died within 24 hours. Xenophon's portrait occurs on some small bronze coins of Cos of the first and second centuries.

CHEMOTHERAPY IN SMALLPOX.—The use of Prontosil rubrum in a case of smallpox is reported by C. King and K. A. de Rozario (*J. R. Army med. Cps*, December, 1938, p. 404). Administration of the drug was begun on the fifth day after the onset, as near to the beginning of the pustular stage as could be judged. The secondary rise of temperature that is almost always present in this disease did not take place.

CORRIGENDUM.—In our account of The Clinic on March 11 (p. 594) the charge for rooms was said to include theatre fees. This is incorrect; there is a charge of 1½–5 guineas for the use of the theatre.